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house built of wood or bamboo, surrounded by

Original Articles.

A CIVIL SURGEON "ON TOUR" IN
UPPER BURMA.

BY J. ENTRICAN,

LT.-COL., I.M.S.,

Civil Surgeon, Meiktila.

To my mind one of the chief charms of an up-country civil surgeoncy is the District touring.

To get away from the routine of headquarters, to be free for a few days to arrange one's own work, and combine it judiciously with a little play, refreshes both mind and body, keeping away that staleness which is so apt to set in when one is tied down to a particular place and routine.

Consequently, when there is no urgent work at headquarters, a tour is, so to speak, indicated.

Branch hospitals must be inspected, outbreaks of epidemic disease investigated and, if possible, stamped out, registration of vital statistics enquired into, and the work of the vaccinators tested to prevent fraud. It is so very easy to successfully vaccinate a number of imaginary children, that not infrequently the vaccinator succumbs to the temptation.

Some people have been heard to assert that a wonderful quickening of the civil surgeon's interest in vaccination takes place when the snipe season begins. Ribald men have even talked about "going on tour" to vaccinate the snipe," but this of course is a base and groundless calumny.

Touring in Burma is a much less elaborate business than in India.

No one ever uses tents, and a small army of servants is unnecessary. In many places there are Government bungalows for the use of officials on tour, and where these do not exist, there is always a "zayat," in which one can put up.

Every village and "phongyi kyoung," or monastery, has one or more zayats for the accommodation of travellers,—generally wooden structures with a roof and floor, the latter raised two to four feet above the ground. Sometimes the building is partially closed in, but frequently quite open.

The village "Thugyi," or Headman, brings curtains to hang round the zayat and screen off a bathroom, also mats or rugs for the floor. With a camp-bed, table and chair this temporary residence is complete and quite comfortable. The village maidens bring pots of water, bundles of firewood, grass, straw, etc., and the ponies,—for most of the touring is done on horseback,—are tied up under a neighbouring tree.

The ordinary establishment for touring is a couple of Burman "loogalays," or boys, and one or more syces depending on the number of ponies required; and the usual procedure is for one loogalay to start after dinner in a bullock-cart and travel during the night to the next halting place, 10 to 20 miles distant. There, everything is prepared for the reception of the hungry, thirsty Civil Surgeon, who will probably arrive before noon.

The other loogalay remains behind to prepare *chota hazri*, and as soon as the Civil Surgeon has started, packs up the remainder of the kit and follows to the next camp.

At dawn the Civil Surgeon is in the saddle and the day's work begins. The task before him is to visit half a dozen or so villages, gradually working round to the next halting place.

The country varies, stretches of cultivated land alternating with undulating ground covered with sparse scrub, or heavily timbered forest pierced with innumerable and confusing tracks. One catches glimpses of the wild life of the jungle, mostly feathered game and the smaller varieties of deer, occasionally a "thamin" or, more rarely, a sambhur. The larger game is seldom seen, though in some districts wild elephants have to be avoided. The only dangerous animal likely to be met with is the half-wild water-buffalo,—a vindictive brute, with an undying hatred of Europeans. If you meet him on foot and alone when he happens to be in a bad temper, I recommend the nearest tree. If mounted, you are generally, though not always, in better case. Once when riding through some low scrub jungle, I was suddenly charged by one of these gigantic brutes, and promptly fled, but the going was so bad that I could not get away fast enough, for the buffalo came through the scrub as if it had been meadow grass and at a pace that astounded me. Fortunately I was training the pony for polo and carrying a stick to get him accustomed to it. When the buffalo came within range, I succeeded in landing several very hard backhanders on his nose, and eventually he desisted, but it was a close shave.

If circumstances compel you to interview a water-buffalo, better, far better, than either tree or pony or polo-stick is a Burmese child. Its age does not matter, anything old enough to stand upright will answer the purpose. Clothed in a grin and armed with a twig, the brat marches up to one of these truculent monsters, calls it names, smacks it on the nose, orders it to clear out, and simply puts the fear of God into it. You are perfectly safe in company with a Burmese infant, but the ignominy of your position, as a representative of the ruling race, bites into your very soul.

The first village is soon reached, a jumble of houses built of wood or bamboo, surrounded by

a high thorn or prickly-pear hedges, with one or more wooden gates, which are closed at night. If improved housing is an indication of increased material prosperity, there is no doubt that a great advance has taken place during the last quarter of a century. The houses are larger, built of better material, and contain more furniture than formerly. The life of a Burmese house is not generally a long one, and as the older houses fall into disrepair, they are replaced by greatly improved structures.

The Civil Surgeon rides up to the Thugyi's house, a table and chair are brought out, and the birth, death, vaccination and other registers produced for inspection. If any vaccination has lately been performed, the children are collected and the truth or otherwise of the vaccinator's entries verified.

Unless in the presence of a small-pox epidemic, the attitude of the people towards vaccination is generally apathetic. There are no conscientious objectors, but no one wants to take the trouble. Perhaps also there is that inherited distrust of all Government action, which is so characteristic of the Asiatic.

In the presence of an epidemic, the apathy quickly vanishes, but even apart from this, one sometimes hears outspoken acknowledgment of the benefits of vaccination. Once, while shooting in an out-of-the-way part of the country, I was sitting in company with the village Thugyi, waiting for beaters. A man came towards us walking in the characteristic manner of the blind. In answer to my enquiry, the Thugyi told me the man had lost his sight from small-pox when a child, and that formerly such cases were very common, but now, since the Government had introduced vaccination, there were no more blinded children, and he added emphatically,—"Vaccination is the best thing your Government has given us." This happened many years ago, before the annexation had become merely a dim and distant memory, and the Thugyi had spent most of his life under the Burmese régime. I was not there in any official capacity and he did not even know my profession, so I think the testimony was unbiassed. The time is surely more than ripe for the extension of the Vaccination Act to rural communities. It would meet with no opposition, but be accepted as death and taxes are accepted, though no one likes either.

The Burmans as a race are so irresponsible, so utterly lacking in foresight, such a Peter Pan amongst nations, that the very success of vaccination increases the difficulty of carrying it out voluntarily.

The longer a district has been free from small-pox, the greater the reluctance to be vaccinated.

The people have the same claim for protection by its rulers, as a child has by its parents, and for

the same reason, not once but many times, headmen have told me that there was no need for vaccination in their villages, "because there had been no small-pox for several years." You cannot deal with a topsy-turvy mentality like this on any voluntary basis.

The birth register is next examined. It is never a complete record of "domestic occurrences," for the names of children who die young are rarely entered. What is the use, argues the Burman, of taking all that trouble about infants who only live a few days or weeks?

The official birth-rate, about 35, is consequently far below the real one, which I believe is over 50 per thousand. The rule that a high birth-rate is always co-existent with a high infantile death-rate, holds good here, for probably over 300 out of every thousand children die in the first year of life.

Yet in spite of this, the village swarms with fat brown babies, jolly little beggars, as free of care as they are of clothes.

It is the women who really pay the toll, and a heavy one it is, for this swarming childhood.

At one time I carried out an investigation, extending over several years and involving enquiry into the deaths of several thousand women between the ages of 15 and 50, and as a result became convinced that between 30 and 40 per cent. of all the women who die between those ages, die from causes directly or indirectly due to childbirth.

I could make no attempt to estimate the chronic ill-health and suffering due to the same cause, but it must be enormous.

This never-ending tragedy, for it is nothing else, is chiefly due to ignorant and barbarous customs, handed down from past ages, and can only be removed by the slow spread of knowledge.

Once, when on tour, several Burmans came to me late one evening and asked me to go to a village a couple of miles away to see a woman who had been in labour for three days. I accompanied them, but on arrival at the village we were greeted with the news that the child had been born. I enquired how it had been managed, and they replied, pointing to a heavy fat man, whose face wore a self-satisfied grin,—"We got him to jump up and down on the woman's belly." I saw the wretched victim, who was in a state of collapse, and suggested that I should examine and see if I could do anything for her. But no! they were so pleased with their success that they preferred to continue their own methods. The child was alive and the head showed no signs of excessive pressure, so the case may have been merely one of uterine inertia, which appropriate treatment could have remedied. The ill-used woman died during the night.

Things in the future, a beginning has been made by the appointment of



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out-door maternity nurses, trained at the Dufferin Hospital, Rangoon, to some of the larger towns and villages. These do good work, but they are so few, perhaps two or three in a whole district, that they only touch the fringe of the evil.

The perusal of death registers may not appear to be a very interesting occupation, but occasionally one stumbles across something beyond the ken even of the Royal College of Physicians.

One curious cause of death called "Pengoo Na," or Spider Sore, attracted my attention. I collected 50 cases spread over three years in one district. The sore or disease is said to be due to the bite of a tiny spider, and is quite unknown in towns. I managed after much difficulty to procure a couple of alleged specimens, which were about one-half the size of a small black ant, and sent them to the British Museum for identification. In reply the writer gave the name and classification of the insect, but added that it had never been credited with the poisonous powers described by me. Unfortunately this letter, with most of the papers I possessed, was sent to the bottom by a German submarine, and I cannot remember the insect's name or classification.

The villagers have no doubt whatever about its poisonous powers, and say that, although healthy adults frequently recover, weakly and old or very young people invariably die.

I have seen two cases—one alive, the other dead. The former, a sturdy girl of 19, had been bitten on the cheek three weeks previously and was well on the way to recovery.

There were two deep gangrenous ulcers, each about the size of a four-anna piece, on the cheek, while the surrounding tissues were brawny and pitted with small sinuses, from which pus was oozing. The part had been enormously swollen (though this had subsided), and evidently the seat of intense septic inflammation. The girl said she did not know she had been bitten, until the cheek became swollen and painful.

Some villagers say that the bite does not develop until some oil touches it; others that water has a similar effect. As the Burmans use oil largely both in cooking, and dressing their long hair, while in their persons they are very clean, it is easy to understand that either of these conditions is almost certain to be present, but I am unable to frame any theory to account for this belief.

The second case was that of a frail elderly woman who had been bitten the previous day and died on the morning of my arrival. There was a small bluish puncture near one of the lower eyelids, which was slightly swollen, but no other visible lesion.

In this case the intensity of the poison was apparently sufficient to cause death before any local reaction could set in. If, as the villagers allege, a tiny insect possesses such tremendous

power, one can only be thankful that it is not more common and more widely distributed.

Village sanitation is almost as thorny a subject as the village fence, which latter, from the point of view of the former, is an unmitigated evil. The soil of the enclosed area is fouled by generation after generation of human beings, cattle, dogs, etc., and is only occasionally purified by fires, which sometimes wipe out a whole village. Small wonder, then, that there is a plague of flies and other potential disease-carriers.

A great step forward would be the stabling of all village cattle in one location, instead of having them dispersed throughout the village, frequently underneath the houses. The state in which many of these cattle are kept is indescribable. At night they are penned up in enclosures often more than knee-deep in semi-liquid filth. All animals suffer, while not infrequently young and weakly calves die from suffocation when no longer able to stand upright. From an economic point of view the loss must be enormous.

A single large pen, with the headman responsible that it is kept in reasonable sanitary condition, would do much to improve matters.

Occasionally the Thugyi will consult the Civil Surgeon about digging a new, or repairing an old, well. This is not a tribute to one's sanitary knowledge, as you might perhaps think, but a shrewd move to obtain a recommendation for a grant from District Funds, for the Burman much prefers to spend his own money on building useless pagodas than on works of public utility.

But time is getting on, so mounting once more the Civil Surgeon makes for his next objective.

Perhaps this is a village attacked by one of the three dreaded scourges of rural life,—plague, cholera, or small-pox.

When plague first came to this country, and for several years afterwards, desperate attempts were made to prevent its spread and stamp it out by surveillance, segregation, disinfection, evacuation, inoculation, rat-killing, etc. I fear it must be admitted that our efforts were not only futile, but probably did more harm than good, except in one direction—evacuation. This is really the sheet-anchor of rural communities infected or threatened with plague, and is also the one method that from the beginning excited no distrust or dislike. The people rapidly became convinced of its advantages, and soon began to resort to it of their own accord.

Inoculation would no doubt be a most valuable aid if only the people could be persuaded to accept it, but with few exceptions they remain hostile. This hostility is not, I believe, due to the slight pain and fever following inoculation, but to the fact that immunity is neither complete nor permanent. A single case of plague amongst the inoculated has been sufficient to damn the operation in the eyes of the villagers, though you

may prove to them that there were 50 cases amongst the uninoculated for every one case amongst the inoculated.

Occasionally some dramatic incident will cause a revulsion in its favour, but this is rare.

In one plague-infected village I inoculated four out of five residents in one house; a week afterwards the uninoculated man took plague and died, the other four escaped. A deputation, headed by the Thugyi, came to headquarters and asked me to return and inoculate the whole village. This I did, and the epidemic stopped at once.

Cholera is somewhat of a problem, but fortunately bad outbreaks are not very common. Occasionally it can be traced to an infected well, and the closure of this is followed by a rapid, sometimes an instantaneous, stoppage of the disease. Frequently, however, the cause baffles all attempts to discover it. I believe a good many isolated outbreaks of cholera (so called) are due to ptomaine poisoning, from eating decayed or diseased meat. I have many times traced attacks to this cause. The Burman, though he prefers good, will eat diseased or decayed meat rather than none.

Outbreaks of small-pox are dealt with by segregating those attacked in huts outside the village, and vaccinating all who can be induced to submit to the operation.

At one time a large number of outbreaks of small-pox were due to inoculation, but of late years this practice has diminished.

I believe one of the causes of the former popularity of inoculation was the absence, in the majority of cases, of any troublesome symptoms, such as sometimes follow vaccination, especially under insanitary conditions.

The child may of course develop generalized small-pox and die; this risk is clearly recognized, but accepted, because in the majority of cases the after-effects are almost nil. A small pock, with perhaps a few still smaller ones around it, is the usual course of an inoculation, and the children require little, if any, attention. That the inoculated child may spread infection and give rise to a severe epidemic of small-pox, is either not recognized, or else considered outside the sphere of human action and fittingly left in the hands of Providence.

The improvement in the purity of the vaccine lymph, due largely to the replacement of lanoline by glycerine, has brought vaccination more on a par with inoculation as regards local effects, for the severe inflammation formerly common after vaccination is now rarely seen.

Riding from village to village the morning rapidly passes away until camp is reached, in a phongyi kyoung, on the outskirts of a village. Bath, breakfast and a siesta occupy the time until the afternoon's work begins. This may be a

repetition of the morning round, starting out at 3 p.m. and returning at nightfall, or perhaps there is a branch hospital to be inspected.

This, I confess, is one of the least enjoyable duties while on tour. Equipment, records, etc., have to be gone through, and conundrums, which would sometimes not be out of place amongst the "Hard Cases" in *Truth*, settled.

The Sub-Assistant Surgeons in charge of these institutions lead professionally rather isolated lives, but in spite of this handicap the slackers are few, while some are extraordinarily keen and energetic. Still I think they should more frequently be given a turn of duty in some large hospital to brush up their knowledge.

But every afternoon is not occupied in the pursuit of work. Perhaps there is a *jhil* not far away where a pleasant and profitable time can be spent after duck and snipe, the bag forming an agreeable addition to the daily menu.

The ordinary Burman villager does not appreciate the attractions of shooting except for the "pot."

Sitting down to rest on one occasion while out snipe-shooting, a friendly old Burman came up and entered into conversation.

Picking up a snipe he remarked that it was a very small bird, and enquired the price of a cartridge. I replied about two annas. After some mental arithmetic he announced that I could buy a chicken for four annas, and there was a great deal more eating on one chicken than on two snipe, not to mention the time and trouble in getting the latter. He evidently thought I was rather a fool to buy cartridges instead of chickens. I had not the courage to tell him that sometimes a snipe cost several cartridges,—he would have regarded me as a lunatic. Walking back to camp after flight-shooting, one night, I saw a weird and interesting phase of jungle life. The path led through some heavily timbered country, with here and there open grassy glades. Coming suddenly on one of these open spaces, I stopped motionless, in the shadow of a large tree, at the sight that confronted me.

On the open grass, lit up by the moonlight, some 15 or 20 hares were holding high revelry, standing on their heads, turning somersaults, performing the wildest antics, all as quaint and weird as ever a writer of fairy tales conjured from his imagination. I watched them fascinated, and scarcely daring to breathe, for probably a minute. Then like a flash they vanished, nothing remained but the bare moonlit grass,—the revellers had disappeared as swiftly and silently as the fairies are said to do.

In most villages there is a "mokso," or shikari, who knows where game is to be found. The calling is not a very reputable one, for it is against Buddhist principles to take life in any form, and the mokso is, by all accounts,

doomed to a very thin time in the next world. This, however, does not appear to affect his enjoyment of the good things of the present life, and in their way many of these men are "characters," frequently "bad" I admit.

I have very kindly recollections of one old mokso, to whom I've been indebted for many good days.

Before starting for a shoot, a certain formula was always gone through. The mokso explained that the "nat," or spirit, which ruled this jungle, was a bad-tempered, cantankerous fellow, whose good will could only be purchased by the presentation of a bottle of beer. If no beer was forthcoming, we might as well stay at home, for the nat would warn all the animals in the jungle. The appeal was irresistible and a bottle of beer was quickly transferred to the mokso's haversack.

On arrival at the shooting ground, he selected a tree in which he announced the nat lived. The beer was then opened and a drop or two sprinkled on the tree to the accompaniment of a mumbled prayer. The beer was recorked, returned to his haversack, and never touched until the shoot was over. If successful a few tiny pieces, snipped off the hoofs, ears and muzzle, were presented on a leaf to the nat, as his share of the bag. Having now, as he considered, done his duty, the old gentleman would sit down, reopen the beer and drink it to the last drop, with an appreciation that was a perfect delight to behold.

There is much joy in the village after a successful shoot. Every man, woman and child turns out to view and get a share of the spoil, for though a Burman Buddhist will not risk his soul's salvation by taking life, he is quite ready to enjoy the proceeds of another's sin. It is the man who kills, not the man who eats the "kill," that must pay the penalty. Besides, what does it matter about a thekin's (sahib's) soul,—probably he has not got one at all! only! So the crowd sits round laughing and chattering while the meat is cut up by enthusiastic volunteers.

It is interesting to watch the faces of the people, for though there is a fairly well established Burman type of face, one often sees startling contrasts, even in remote villages where alien blood would be least expected. I've seen two men side by side,—one, whose face might have been that of a sunburnt Irish peasant, the other, that of a Krooman, from the Gold Coast.

Very noticeable is the number of old men one sees with that saintly, ascetic, refined type of face, usually associated with some high church dignitary. These men were born and brought up under the old Burmese régime, and it will be interesting to see if the present generation, born and brought up under British rule, will, when it reaches old age, show similar characteristics.

At last the day's occupations are over and the Civil Surgeon is back in camp. Dinner is not long delayed for the jungle folk keep early hours.

Gradually the noises of the day die away, and silence reigns, broken only by the tinkling of the bells on the pagoda as they sway in the breeze. The kyoung with its fantastic, carved roof, tawdry and dilapidated by day, stands out a vision of beauty and mystery in the clear moonlight. The spell of the scene grips one, and with it comes the reflection that there are worse places in the world than Upper Burma.

ANALYSIS OF 1,200 CONSECUTIVE ABDOMINAL OPERATIONS PERFORMED FOR GYNÆCOLOGICAL DISEASE ON BURMESE FEMALES.

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THE following is an analysis of twelve hundred consecutive abdominal operations performed during the last eight years for gynæcological disease on Burmese female patients of Burma under my charge at the Rangoon General Hospital.

The analysis has been undertaken with a view to enquiring if Burmese women, possibly by the influence of a hot climate and different mode of livelihood, vary materially in diseases peculiar to their sex from females living in a temperate zone like England.

The following is a list of the various gynæcological operations performed :

TABLE A.

Operations.	Total.	Deaths.	Per cent.
Ovariectomy ...	237	8	3
Salpingo-oophorectomy for tubal disease ...	431	23	5.5
Salpingo-oophorectomy for extra uterine pregnancy ...	54	2	4
Hysterectomy for fibroids ...	199	3	1.5
Hysterectomy for carcinoma ...	47	9	19
Cæsarian section ...	13	2	20
Myomectomy ...	7	...	...
Hysteroplexy ...	145	...	...
Laparotomy exploratory ...	29	5	17
Laparotomy for peritonitis of pelvic origin ...	24	4	18
Miscellaneous ...	14	2	14
TOTAL ...	1,200	58	5

The percentage of mortality attending these operations is no doubt high when compared with similar results obtained in English hospitals, but it must be remembered the large majority of the operations were performed for neglected disease. Surgery, as practised by western methods, is still, so to speak, on probation in Burma, and though the inhabitants of the larger towns have

gained some confidence, and are rapidly gaining more, those of the small towns and villages remain adverse to anything but the slightest surgical measures. Abdominal operations are therefore viewed with great apprehension, and as a rule not submitted to till a long course of medicinal native treatment has proved unavailing, or until pain and ill-health have become so acute as to destroy all joy in living.

Up till some eight years ago when the palatial New General Hospital was opened in Rangoon, no serious effort had been made to deal with gynaecological diseases; since that date, however, a special Gynaecological Department has been opened, and a steady growing practice established. As confidence in this department has increased, patients have presented themselves in less obviously advanced stages of disease, but, for the present and for some long time yet to come, it must be expected that the large majority of the patients will attend with diseases of long duration. The Burmese woman differs greatly from the women of India, being allied to the Mongolian race, and though resembling in many characteristics the Japanese female, she is of a taller build and of a weaker physical development. Unhampered by any of the caste prejudices so common in India that prevents a female mixing with the society of men, the Burmese woman is still of distinctly feminine attributes, and amongst them timidity and fear of pain are well marked. In consequence she has at first a great dread of hospitals which, along with other more civilized races, she associates closely with operations of a cutting nature; once, however, confidence is established the Burmese woman reposes a trust in the surgeon which is at times embarrassing, since she often invests him with superhuman powers of effecting a cure.

As a patient, the Burmese woman behaves excellently, she is of a bright and grateful disposition, and her habits are cleanly and pleasing; oral sepsis is very rare, and alcohol drinking practically unknown.

With regard to gynaecological functions, menstruation usually commences about the age of 14-15 years, the period lasts about 4-5 days and is in no way excessive. Nearly every Burmese woman marries, for the most part at the age of 18-20 years, and being of a fruitful race large families are common. The menopause usually occurs about the age of 47-50 years and is unaccompanied as a rule by any nervous disturbance.

As regards diseases peculiar to their sex, it appears to me that Burmese females suffer from no special liability, nor enjoy any special immunity, and that their ailments behave in a very similar manner to those of women in more temperate climates under more civilized conditions of life. In the accompanying table of operations the

relative frequency of particular operations does no doubt vary from a similar list of consecutive operations at a large English hospital, but such variations are mainly due to the fact that the practice of gynaecology is at present in its infancy in Burma. Thus, until greater confidence has been established in Western methods of treatment, the greater proportion of the patients will present themselves with diseases in their acute stage, or if suffering from tumours with the growths so far advanced in size as to produce great discomfort. To make this point clear I would mention that at the commencement of the period over which this series of operations extend, hysterectomies for uterine fibroids were few and far between, whilst practically every case of cancer of the cervix was too hopelessly advanced to admit of any operation. Hysterectomies for fibroids are now, however, being performed with increasing frequency, and will become, I believe, one of our commonest abdominal operations, whilst it is also now possible to select a small but increasing number of cases of cancer of the cervix as being fit for effective removal. Any list, then, of operation does no more at present than notify the occurrence of the various forms of gynaecological disease, and cannot be considered as a record of their relative frequency.

As mentioned before, the percentage mortality of the various operations does not compare favourably with those obtainable amongst a more civilized community, but the debilitated condition of many of the patients and the advanced stage of their disease have had much to do with this result,—a state of affairs which is further aggravated by the necessity of operating without any delay. Any pre-operative rest in bed is as a rule unobtainable, for on admission into hospital the Burmese woman is very timid, quite ignorant of hospital routine, and so suspicious; most frequently she has with difficulty made up her mind to enter hospital, and more often than not in the face of repeated protestations from her relations and friends. Though she has thus screwed up her courage to the sticking point, even when in an hospital ward any delay in performing the necessary operation, or any fright from the sight of some suffering patient, will dissipate her good resolutions and she will pack up her bundle to depart and return no more. Numerous instances of such behaviour prevent the insistence of any pre-operative treatment however desirable, and the great majority of the patients are operated on within a day or so of their admission.

Ovariectomy.—237 Ovarian cysts were operated on with 8 deaths.

The age of the patients operated on varied from 17 to 71 years. Only 8 per cent. of the patients operated on for ovarian cysts were unmarried, a percentage considerably smaller than with white races; very few Burmese women, however, remain

TABLE B.

Showing the ages of patients in the different operation groups.

AGE.	Ovariectomy.		Tubal disease.		Tubal pregnancy.		Myomectomy.		Hysterectomy for fibroids.		Carcinoma of cervix.		Hysteroplexy.		Exploratory laparotomy.		General peritonitis.		Miscellaneous.		Caesarian section.		TOTAL.	
	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.	Cases.	Per cent.
Under 20	11	5	8	2	2	4	...	...	...	...	...	...	11	7	...	...	...	...	...	...	...	...	32	3
20-29	58	24	220	51	16	30	4	60	2	1	...	...	48	33	1	3	11	46	2	28	1	7	363	31
30-39	83	35	151	35	33	61	3	40	64	33	11	23	54	39	10	35	13	54	9	50	5	39	436	36
40-49	61	26	49	11	3	5	...	...	94	47	22	47	23	15	16	55	...	...	3	22	6	47	277	23
50-59	22	9	3	1	...	...	...	...	31	15	12	25	6	4	2	7	...	...	...	...	1	7	77	6
60 and over	2	1	...	...	...	...	...	...	8	4	2	5	3	2	...	...	...	...	...	...	...	...	15	1
TOTAL	237	100	431	100	54	100	7	100	199	100	47	100	145	100	29	100	24	100	14	100	13	100	1,200	100

Gynæcological operations.

OPERATIONS.	Number of cases.	AGE.														RESULTS.	
		5		10		20		30		40		50		60			
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
<i>Ovariectomy.</i>																	
For cysts ...	226	...	...	9	1	56	...	77	2	56	3	19	1	2	...	219	7
For solid growths	11	...	...	1	...	2	...	4	...	2	...	1	1	...	...	10	1
TOTAL ...	237		...	10	1	58	...	81	2	58	3	20	2	2	...	229	8

unmarried, and the fact that 55 per cent. of the patients had never been pregnant goes to show there was no real difference in the relationship of ovarian cysts to sterility. The menstrual function in the large majority of the patients showed no deviation from the normal.

Every kind of ovarian cyst was met with, the proportion being:—

Proliferating multilocular cysts	...	83 per cent.
Papilliferous cysts	...	4 "
Dermoid cysts	...	7 "
Parovarian cysts	...	6 "

These proportions seem very similar to those I have been able to obtain for white races. Many of the tumours were very large, measurements of 50 inches being obtained of the girth of the abdomen taken round the umbilicus. Quite a proportion of the patients suffered from marked dyspnoea with oedema of the lower extremities.

With such cases the administration of an anæsthetic was a serious consideration and one patient died on the operation table from the effects of the anæsthetic. Chloroform was the anæsthetic invariably used; at one time an attempt was made to substitute spinal anæsthesia, but the patients objected so strongly to being conscious whilst the operation was in progress, that the method was abandoned. If the dyspnoea was so acute as to prevent the patients lying down, a partial withdrawal of the fluid contents by tapping was attempted on the day previous to operation, and when successful, undoubtedly rendered the administration of the anæsthesia safer, otherwise all cysts were removed entire. The incision necessary at times reached from the ensiform appendix to the pubes, and though lengthy, invariably healed without trouble, and, as far as could be ascertained, with no greater tendency

to ventral hernia than smaller incisions. The presence of complicating adhesions was frequent, due largely to previous violent massage of the abdomen. Burmans are staunch believers in the efficiency of massage, and nearly every patient had undergone a course of violent and prolonged massage of the abdomen in the hopes of "dispersing" the tumour.

As to the actual duration of the cysts or their rate of growth the patients' histories varied greatly, and no reliable information could be gathered, though there was no doubt certain cysts after considerable periods of quiescence had taken on a rapid growth. One woman of 30 years operated on for an ovarian dermoid, stated she had had the tumour from childbirth. The cyst was very large, completely filling the abdomen and everting the lower ribs in an extraordinary manner; it contained three pieces of bone each the shape and size of an adult scapula and studded with teeth, and also an enormous amount of hair. It was noted with all the dermoid cysts that the hair contained in them was the same colour as that of the patient, *i.e.*, a jet black.

With some of the large parovarian cysts the peritoneum was so extensively stripped up as to render the rectum and sigmoid flexure apparently sessile on the cyst wall—a condition at first perplexing, and one which complicated the operation.

Of the accidents that ovarian cysts are liable to, the following conditions were met with:—

Twisted pedicle	...	...	6 cases.
Suppuration	...	...	4 "
Rupture of cyst	...	...	2 "

One case of complete detachment of the pedicle was operated on, this detachment had evidently taken place by slow torsion, during which process the cyst had formed dense and vascular adhesions to the under-surface of the liver by which it continued to be partially

nourished. The severed pedicle and the lower part of the cyst were extensively impregnated with calcareous salts, and the cyst by acting somewhat as a foreign body had produced considerable ascites. The woman was aged 47 years, and had noticed the tumour for 11 years; after removal of the tumour the ascites disappeared and did not return. Of the ruptured cysts, one had been ruptured by forcible massage, the other had burst spontaneously.

Two cases of ovarian cyst complicating pregnancy were operated on. Both patients were in the eighth month of their pregnancy and the cysts being large the abdomens were enormously distended. In one case labour came on within 24 hours of the operation, the other case went to term. Both women made good recoveries, and both children lived, being well-formed and healthy.

Of eleven solid tumours of the ovary operated on, six were sarcomata and five fibromata; two of the former and two of the latter had accompanying well-marked ascites; in fact it was for this condition the patients sought relief. Ten patients recovered and one, a case of sarcoma in a very poor state of health, died. In one case of sarcoma, both ovaries were affected, the growths being of about equal size, *i.e.*, that of a cricket ball. One case of fibroid of the ovary was interesting on account of the calcification of the growth, it occurred in a patient aged forty years, and the tumour being the size of a croquet ball, of stony hardness and very movable, gave the impression of a cannon ball loose in the abdomen. The growth was removed with great ease and found to consist of fibroid tissue, so impregnated with calcium salts that it could not be cut with a knife. At one point a thin layer of atrophied ovarian tissue could be made out microscopically. The sarcomata were removed from patients either under twenty-five or over forty years, the fibroids of all occurred between the ages of 30-40 years.

Gynaecological operations.

OPERATIONS.	Number of cases.	AGE.												RESULTS.			
		5		10		20		30		40		50				60	
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Salpingo-oöphorectomy— For hydro-salpinx	6	...	...	...	...	...	...	3	...	3	...	...	...	...	...	6	...
„ pyosalpinx	150	...	...	7	1	120	3	13	1	5	...	...	...	...	...	145	5
„ acute salpingitis	3	...	...	...	...	1	1	...	1	...	...	...	...	...	...	1	2
„ chronic salpingitis	67	...	...	...	...	14	...	45	...	8	...	...	...	...	...	67	...
Salpingo-oöphorectomy— With amputation of part or whole of body of uterus for double pyosal- pinx	205	...	...	...	...	77	4	79	9	30	3	3	...	...	...	189	16
TOTAL	431	...	...	7	1	212	8	140	11	46	3	3	...	...	...	408	23

Operations for pyosalpinx were performed with exceptional frequency, this frequency being due to the great prevalence of venereal disease in Rangoon city and its neglect of treatment. On a consideration of the history-tickets the opinion has been formed that quite 90 per cent. of the cases were of gonorrhœal origin. In 69 per cent. the pyosalpinx was bilateral. In 56 per cent. of the cases of pyosalpinx operated on, a partial or complete removal of the body of the uterus was also carried out. The mortality attending the operations worked out at slightly under 6 per cent. The youngest patient was aged 16, the eldest 52 years. Forty-five per cent. of the patients were between the ages of 20 and 30 years. It would at first sight seem that operations for pyosalpinx had been performed with undue frequency, and that the beneficial results of prolonged rest had not been given a sufficient trial. Unfortunately native patients almost invariably refuse to submit to any such prolonged form of treatment owing to family reasons of considerable weight, and if a cure is to be attempted it must, in the large majority of the patients, be by operative measures. Another impression that might be gained is that Burmese women were of an excessively immoral tendency; this is incorrect. Though a small proportion of the patients were prostitutes the great majority were respectable women who had been infected by their husbands,—a result due to the irresponsible nature of the Burmese males, and to their ignorance in believing they are cured of gonorrhœa as soon as the acute symptoms have passed off. The operations were found to be by far the most difficult of all the gynæcological surgery performed, the contents of the pelvis being often welded into a solid mass roofed over with adherent intestine, the whole tumour extending as high as the umbilicus.

In cases of double pyosalpinx where both ovaries were hopelessly disorganized and incorporated into the pus cavity, a supra-vaginal hysterectomy was also performed. This proceeding greatly simplified the operation.

In cases of a smaller nature where one ovary, or a portion of an ovary, appeared still capable of performing its function, a partial amputation of the fundus of the uterus was substituted for a supra-vaginal hysterectomy.

I am strongly of opinion that an operation for the relief of double pyosalpinx is, as a rule, unsuccessful as regards future relief from pain and discomfort, if the whole of the infected uterus is left behind. The removal of both the pus-distended tubes plus a supra-vaginal hysterectomy, or an amputation of the fundus of the uterus, has in my experience rendered by far the most satisfactory results. Theoretically a supra-vaginal or pan-hysterectomy is preferable with the view of obtaining a complete cure, but there are many objections to abolishing the

menstrual function especially in quite young women. Apart from anything else, the native female attaches the greatest importance to the menstrual function, and is greatly opposed to its entire abolition. In cases where the ovaries were not entirely disorganized, and the fundus of the uterus only was removed, the operation was not followed by complete cessation of menstruation, though as a rule the function was greatly diminished. The menstruation often only amounted to a scanty one-day flow, but this was as a rule sufficient to satisfy the patient's mind.

It was, on the other hand, of great interest to note how little real disturbance accompanied the production of an artificial menopause in quite young women, when the extent of the disease enforced a clear sweep of the disorganized pelvic organs, ovaries, tubes and uterus.

I firmly believe that incomplete operations for pyosalpinx are often the cause of much after-ill-health, in short the patient is not cured; on the other hand the after-results of removal of double pyosalpinx plus a partial hysterectomy have, as a rule, been excellent. No hard and fast rule can be laid down, each case must be judged on its individual merits. The combined operations were attended with a higher mortality, *i.e.*, 8 per cent., but the method was only employed in cases of extensive disease.

Thirty-four cases of pyosalpinx were also treated by vaginal drainage, the end results were disappointing, and many cases had to be dealt with later by abdominal section for removal of the affected fallopian tubes.

Vaginal drainage for a pyosalpinx is useful as a temporary measure with very distended and firmly adherent tubes, but in my experience complete removal of the tubes by a subsequent abdominal operation is almost always necessary if a real cure is to be effected.

In a few favourable cases of pyosalpinx, removal was carried out by the vaginal route, but after a short trial this mode of operating was abandoned as unsatisfactory and dangerous.

In 126 cases, the pyosalpinx removed entire was sent unopened to the pathological laboratory for bacteriological examination. The following results were obtained:—

Pus sterile	...	70 per cent.
Doubtful gonococci	...	17 "
Gonococci	...	12 "
Tubercle bacilli	...	1 "

One case of tubercular pyosalpinx was very interesting: the patient was first admitted for tubercular peritonitis, laparotomy was performed, and the peritoneum found to be generally affected with milary tuberculosis, the fallopian tubes not being especially affected. Under a course of tuberculin injections the patient recovered and remained well for three years, during which time she married; she then returned with a pelvic

tumour as high as the umbilicus and a sinus discharging through the scar of the abdominal incision. After a difficult operation in which the rectum was extensively wounded, two large tubercular pyosalpinges, together with the whole uterus, were removed and tuberculin injections again instituted. Three years after this second operation the patient is in excellent health without any signs of tuberculosis. Though pulmonary tuberculosis is not uncommon amongst the Burmese, tubercular disease of the generative organs has very rarely been met with.

cases the hæmorrhage had arisen from the rupture of a tubal pregnancy. The majority of patients operated on were between the fifth and seventh weeks of their pregnancy, but in one case only 23 days had elapsed since the last menstrual period, which was reported to have been normal in all respects.

Two cases of secondary rupture of the gestation sac were operated on, both in the sixth month of pregnancy. In both cases the development of the gestation had continued between the layers of the broad ligament. One recovered; and the

Gynæcological operations.

OPERATIONS.	Number of cases.	AGE.												RESULTS.	
		5		10		20		30		40		50		60	
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Salpingo-oöphorectomy— For ectopic gestation ...	54	...	...	2	...	16	...	31	2	3	...	...	...	52	2

Ectopic gestation.—Fifty-four cases were operated on with a mortality of 4 per cent. owing to delay in medical aid being sought, the condition of several of the patients was desperate. It was instructive to note in such cases how readily recovery took place, once the bleeding vessels had been secured and intravenous injections of saline solution instituted. Rapidity in operation was a very important consideration. In a practice where inflammatory disease of the fallopian tubes is very common, it is interesting that cases of ectopic gestation were not more frequently met with, but no connection between these two conditions could be established, and in every case operated on, the unaffected tube was found, to all appearances, quite normal.

In a large majority of cases a history of long continued previous sterility was obtained. In five cases the intra-peritoneal hæmorrhage was due to tubal abortion; in one case profuse internal bleeding was occasioned by what was possibly a

other died from hæmorrhage,—on admission she was pulseless.

The history of one patient was interesting. Though married she had never been pregnant and on this account had eight months ago undergone an operation for hysteroplexy. Six months after the operation she became pregnant, but the pregnancy was an extra-uterine one, for rupture of which she was admitted into hospital.

One case of pregnancy in a rudimentary horn of the uterus was operated on. The rudimentary horn had a long thin pedicle-like attachment to the uterus, and could be moved freely all over the abdominal cavity. The uterine tissue was greatly stretched and apparently on the point of rupturing, the tumour was removed entirely and contained a well-formed five months' fœtus. The extreme mobility of the tumour and its thin pedicle-like attachment to the unenlarged uterus, combined with the symptoms of pregnancy, made the condition one of great interest.

Gynæcological operations.

OPERATIONS.	Number of cases.	AGE.												RESULTS.	
		5		10		20		30		40		50		60	
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Hysteroplexy ...	145	...	...	11	...	48	...	54	...	23	...	6	...	3	...

ruptured ovarian pregnancy, both the fallopian tubes being quite normal. In the remaining operations, with no deaths.

Ventri-suspension of the uterus was the operation performed for cases of retroversion of the uterus; the majority of the cases were complicated by the presence of adhesions tethering the fundus of the uterus in Douglas' pouch.

Dyspareunia was frequently the cause that led the patients to seek hospital relief, mostly between the ages of twenty and thirty years.

A variety of operations for suspending the uterus were tried, of which the Baldy Webster or sling operation on the whole gave the most satisfaction.

Hysteroplexy was mainly performed when prolapse of the uterus was the outstanding feature and on a more elderly class of patient.

Hysteroplexy by itself will not afford any lasting or real relief to the patient; the abdominal operation should be considered as accessory to vaginal work for the cure of the cystocele or rectocele which practically always exists also and is largely responsible for the discomfort of the patient. Two separate operations are, therefore, as a rule, necessary if a satisfactory result is to be obtained.

It was interesting to note that, though in many cases the degree of uterine prolapse was great, as a rule complete severe perineal tears were exceptional and mainly limited to those cases that gave a history of the application of forceps during labour. The large majority of the patients operated on had, however, gone through their labours without any skilled assistance. Three cases of procidentia occurred in young, nulliparous girls; in these patients slight straining protruded the cervix well outside the vulva. There was no elongation of the cervix, the pelvic contents being herniated out of the vaginal orifice. Two of the patients had worked as coolies

Hysterectomy for fibroids.—One hundred and ninety-nine operations, with a mortality of 15 per cent. The youngest patient was 22 years of age, the oldest 70 years. I am inclined to think fibroids begin to appear with Burmese females at a somewhat earlier age than with Englishwomen, since the proportion of patients operated on below 40 years is high, and the majority of the tumours were large ones of some years' duration. This peculiarity may be accounted for by the fact that nearly every Burmese woman marries about the age of 18 years, for though it is common for fibroids to originate independently of sexual activity, there seems no doubt their subsequent development is greatly accelerated by child-bearing and sexual intercourse.

Of cases operated on—

38 per cent.	had no children.
20 do.	one child.
20 do.	two children.
20 do.	four do.
2 do.	over four children.

These figures give very similar results to those collected for white races, and, since the Burmese are a fruitful race, illustrate the well-known relationship between fibroids and sterility.

In quite 60 per cent. of the cases operated on, one or both fallopian tubes were adherent, usually both tubes were so affected. In fact it was more usual than not to find the course of the operation thus complicated. In 7 per cent. of the cases definite pyosalpinx was present.

The relationship between fibroids and gross inflammatory changes in the fallopian tubes is one of considerable interest. Do fibroids predispose to pyosalpinx or pyosalpinx predispose to fibroids?

Gynæcological operations.

OPERATIONS.	Number of cases.	AGE.														RESULTS	
		5		10		20		30		40		50		60			
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Hysterectomy for fibroids—																	
Supra-vaginal hysterectomy	188	...	...	...	...	2	...	58	2	86	1	31	...	8	...	185	3
Pan-hysterectomy	11	...	...	...	...	...	...	4	...	7	...	...	...	...	...	11	...
Myomectomy	7	...	...	...	...	4	...	3	...	...	...	...	...	...	...	7	...
TOTAL	206	...	...	...	...	6	...	65	2	93	1	31	...	8	...	203	3

carrying heavy burdens, the other was a dancing girl in the habit of performing violent contortions for many hours at a time.

Myomectomy.—Seven cases, with no deaths.

The operation of myomectomy was hardly ever applicable, the fibroids were too large and too multiple.

In my experience it seems the fibroids favour the formation of pyosalpinx. Out of 378 laparotomies in which pyosalpinx was the primary reason for the operation, in only two were small fibroids of the uterus also noted. In many of these operations the body of the uterus was also removed and a special examination carried out to

determine the presence or absence of fibroids. It is true that only 42 per cent. of these patients operated on for pyosalpinx were over thirty years of age. Still if a pyosalpinx was capable of predisposing the growth of uterine fibroids it seems probable this form of tumour would have been discovered with greater frequency.

No case of fibroids complicated by the presence of pregnancy was operated on. Two such cases were met with, but in neither did any operation seem called for, and to the best of my belief the patients passed successfully through their labours.

Of the usual forms of degeneration that uterine fibroids are liable to, myxomatous degeneration was the commonest, but instances of calcareous,

and in three a Wassermann's blood test was carried out with negative results.

From a comparison of the operative statistics of the larger hospitals in England, it would appear that cases of so-called "fibrosis" of the uterus are relatively uncommon with Burmese females. So many factors, however, prevent at present Burmese women from resorting freely for hospital treatment that no definite conclusion is possible. Still if, as many suppose, "fibrosis" of the uterus is due to septic infection, one would certainly expect to meet with more cases, for chronic endometritis of gonorrhœal or puerperal origin is exceedingly common amongst the Burmese females in Rangoon.

Gynecological operations.

OPERATIONS.	Number of cases.	AGE.												RESULTS.			
		5		10		20		30		40		50		60		Discharged.	Died.
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.		
Hysterectomy (Wertheim)— For cancer 	47	...	...	...	...	...	...	9	2	16	6	11	1	2	..	38	9

cystic, sarcomatous, and red degeneration were all met with.

The tumours operated on were mostly of considerable size (the largest weighed 40 pounds), and several cervical and broad ligament fibroids by becoming impacted in the pelvis had produced much suffering; with smaller fibroids hæmorrhage was the reason that induced the patients to seek surgical relief. In such latter cases a high degree of anæmia was invariably present, but no fatality occurred amongst the cases operated on.

For fibrosis of the uterus, eight operations of supra-vaginal hysterectomy were performed. In each case the bleeding had been prolonged and severe, and in all the patients a curettement, which had been previously performed, had only increased the bleeding. A microscopical examination of the removed uteri showed the muscular tissue to have been replaced by an excessive growth of fibrous tissue, and also an abnormal thickening of the outer and middle coats of the uterine blood vessels. In no case was the uterus markedly enlarged, though it was hardened and tougher than normal. All the patients were exceedingly anæmic, and one patient who refused operation, I ascertained, died shortly afterwards. In three cases whose after-history could be followed, the results of the operation were excellent. None of the patients operated on showed any signs of syphilis,

Hysterectomy (Wertheim) for cancer.—Forty-seven cases, with mortality of 24 per cent.—a very discouraging state of affairs. Improved technique in operating will no doubt result in a diminished mortality, but anything like good results cannot be expected until patients present themselves in a less advanced stage of the disease than they do now. In Europe the percentage operability varies from 40 per cent. to 70 per cent., here in only 35 cent. of the patients who sought hospital treatment for cancer of the cervix were operative measures considered to have a fair chance of success, and in 12 cases exploratory laparotomy disclosed that the disease was too extensive for removal.

The decades in which uterine cancer were most common corresponded closely with those of white races, the youngest patient was aged 26 years, the eldest 58 years. In close on 200 patients suffering from undoubted cancer of the cervix, the following age incidence was arrived at:—

1 per cent.	was between 20—30 years
32 do.	do. 30—40 "
48 do.	do. 40—50 "
17 do.	do. 50—60 "
2 do.	do. 60 and over.

The old impression that in America cancer of the uterus was relatively less common in negroes than in white women, has disappeared with increasing knowledge. A similar conclusion

will, I believe, be made with regard to Asiatic women, when their treatment for gynaecological disease becomes more general. At any rate, so far as Burmese women are concerned I feel sure that the incidence of this form of cancer follows the same rules, both in frequency and other characteristics, as with females of fairer races.

Amongst a large number of Burmese females examined for undoubted cancer of the uterus, there have been exactly the same factors as those met with in white women.

The cancer has affected middle-aged married women who have borne many children, and in the large majority of cases the cancer has not commenced until many years have elapsed since the last pregnancy. Social position has not appeared to exert any influence on the incidence

is a question if greater prudence should not have been exercised in selecting cases for operation, but the sufferings of a patient dying from cancer under conditions where medical relief is often unobtainable are so dreadful that the surgeon is tempted to attempt a cure even at considerable risk to the patient's life.

The difficulty of following the after-history of native patients makes any investigation as to the final results of the operation of little value. Of the 38 cases that recovered from operation, four returned with a recurrence of the growth, four are known to be well three years after the operation, and the rest lost sight of, though each patient promised to come back if there was any further trouble, and each was also furnished with a card detailing the operation performed and requesting a report if the patient should attend another hospital.

Gynaecological operations.

OPERATIONS.	Number of cases.	AGE.														RESULTS.	
		5		10		20		30		40		50		60			
		Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Cæsarian section	13	...	...	1	...	4	1	5	1	1	...	...	...	...	...	11	2
Exploratory laparotomy	29	..	...	...	...	1	...	9	1	13	3	1	1	..	...	24	5
General peritonitis of pelvic origin ...	24	...	...	...	...	9	2	11	2	...	...	...	...	...	...	20	4
Miscellaneous— Supra-vaginal hysterectomy for fibro- sis of uterus	8	...	...	...	...	...	...	6	...	2	...	...	...	...	...	8	...
Pan-hysterectomy— For sarcoma of body of uterus	2	...	...	...	...	...	1	...	...	1	...	...	...	...	...	1	1
For sarcoma of cervix	2	...	...	...	...	1	...	...	1	...	...	...	...	...	...	1	1
Suture of uterus for accidental per- foration	2	...	...	...	...	...	...	2	...	...	...	...	...	...	...	2	...
TOTAL	80	..	...	1	...	15	4	33	5	17	3	1	1	...	...	67	13

of the disease. If anything, cancer of the uterus has been relatively more common amongst the well-to-do Burmese female, but this I attribute to their being more likely to consult medical aid than the less educated and poorer classes.

How far these conclusions may be true as regards natives of India, the figures at my disposal are too small for any opinion to be expressed: but from a 20 years' experience on a hospital staff in Burma, I believe there is no real difference in the incidence of cancer as regards Burmese and European women. Only one case of cancer of the uterine body was operated on.

The cause of death after operation was almost invariably due to septic contamination from the growth during operation; in those cases in which this accident could be successfully avoided, recovery was as a rule rapid and satisfactory. It

Connected with the prevalence of cancer of the female pelvic organs, that of sarcomatous growths is also of interest. During the same period twelve cases were operated on and the sarcomatous nature of the growth removed identified by microscopical examination.

Wall sarcoma of uterus body ...	2 cases.
Sarcoma of cervix ...	2 "
Sarcoma of ovary ...	6 "
Sarcoma of retroperitoneal tissues ...	2 "

The youngest patient was aged 22 years, the eldest 50 years.

20—30 years ...	4 cases
30—40 " ...	3 "
40—50 " ...	4 "
50—60 " ...	1 "

In addition, in five cases operated on for uterine fibroids, sarcomatous degeneration of the growth

was found to have taken place, the ages of the patients were 35, 37, 41, 50, and 68 years, respectively. One case of sarcomatous polypus of the cervix presented unusual features. The patient, aged 35 years, greatly emaciated, was admitted with what was thought to be a large abdominal tumour, extending well above the umbilicus and a sloughing mass protruding from the vagina. On vaginal examination the mass was found to completely fill the vagina and also block the pelvis; even after introducing the whole hand into the vagina no pedicle of the tumour could be reached. Laparotomy was performed and the tumour found to be entirely intravaginal, though by enormously stretching the vagina it had so encroached on the abdominal contents as to displace most of the intestines under the ribs. The uterus was unenlarged and perched on the top of the tumour. Pan-hysterectomy was performed without any special difficulty, and to avoid sepsis the cut end of the vagina brought well out of the abdominal wound and sewn on to the skin. In spite, however, of every care, septic infection of the peritoneal cavity did occur and the patient died. The exact duration of the tumour was uncertain, but it was reported to have grown rapidly; *postmortem* examination disclosed no metastatic sarcomatous deposits.

Cæsarean section.—Thirteen cases, with two deaths.

Three cases were performed for severe eclampsia without any labour pains, all the mothers recovered and two children survived. The patients were, respectively, in the 7th, 8th, and 9th month of pregnancy. The convalescence in two cases was rapid. In the third patient, who had suffered from chronic nephritis from childhood, recovery was prolonged. The remaining eight cases were operated on for obstructed labour. All the patients admitted into hospital before labour had commenced recovered; of those admitted in labour, two died from puerperal sepsis. With native patients, owing to the unreliability of the history obtainable, it is exceedingly difficult to judge if septic infection of the genital tract has occurred or not, and on this account in all cases admitted in labour cæsarean hysterectomy was performed.

The post-operative mortality was due to a great variety of causes, including three fatal cases of delayed chloroform poisoning; nevertheless there was no doubt the main cause of death was sepsis. The sepsis in every case arose from some condition complicating the operation, and in all but one case the danger was recognized at the time, and as far as possible guarded against. In cases of this nature it was remarkable how greatly the general condition of the patient influenced a fatal result or a recovery. Patients in a good condition of health, who were able to successfully combat considerable fouling of the

peritoneal cavity, whilst weak, debilitated persons with marked anæmia were likely to succumb to a smaller infection, which in a stronger patient would have given rise to little anxiety. Quickness in operating is no doubt a very important factor, but as long as sepsis can be avoided it seems clear that patients will make rapid recovery from most extensive operations.

Of the accidents in operating, injuries to the ureter were of special interest. Altogether eight such injuries took place in the following operations:—

Hysterectomy for cancer	...	...	2
Hysterectomy for impacted broad ligament fibroids	...	...	2
Enucleation of pyosalpinx	...	...	4

In one case of cancer a considerable length of the left ureter was deliberately cut away, in the other cases the injury was accidental. One case died,—a vulvular cut of the ureter, which was not detected till the patient subsequently developed general peritonitis. In all the other cases the injury was detected at the time of its occurrence and was dealt with as under:—In two cases the cut end of the ureter was implanted into the bladder; of these patients one suffered from a urinary fistula, which closed in a month. In the other five cases the cut ends of the ureter were simply ligatured. These latter patients all got well without any serious complication; they were drowsy for the first two days and the quantity of urine excreted was small, under 20 ounces in the 24 hours, but the amount of urine passed rapidly and progressively increased, and was normal in quantity at the end of 7 days. The patients were treated by very early and repeated purgations, whilst at the same time they were encouraged to drink plenty of water in addition to the routine treatment of saline enemata, one pint every four hours.

THE INFLUENZA PANDEMIC.

By CAPTAIN R. N. O. MOYNAN, R.A.M.C. (S.R.), M.B., B.S. (Lond.),

AND

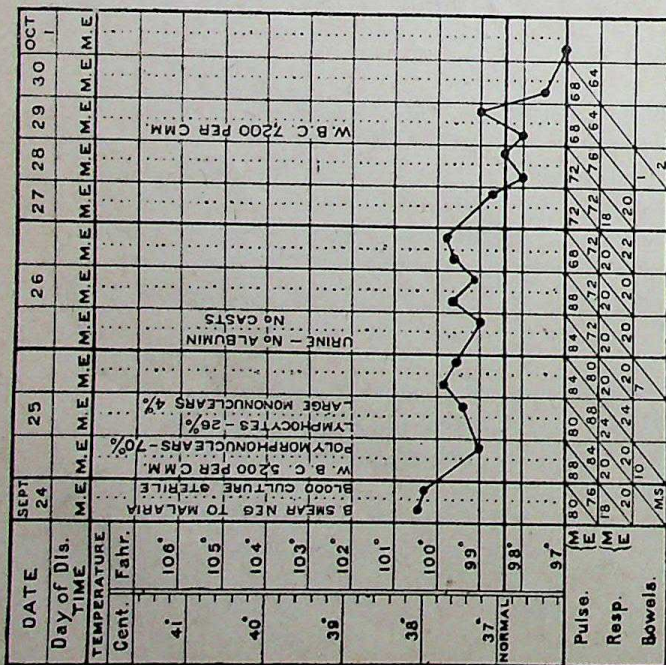
ASSISTANT SURGEON L. D. C. MENESES, I.M.D.

THE following notes are made on cases of British troops admitted into Colaba War Hospital, Bombay, between 15th August, 1918, and 16th October, 1918.

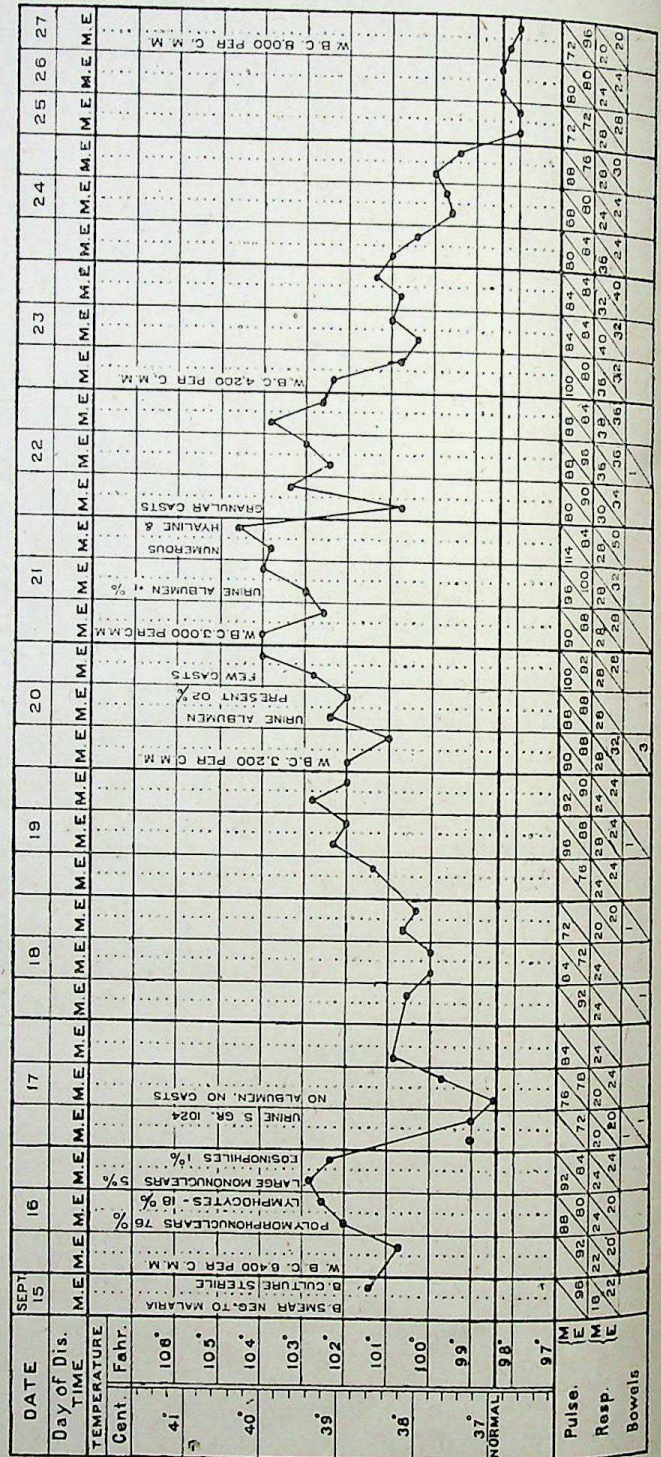
A previous epidemic, commencing about the middle of June, 1918, had ravaged Bombay and was gradually dying away when the present return wave occurred. There is a very marked difference of degree in severity between these two epidemics, the latter being much more severe as regards general symptoms and dangerous complications.

During the above period, 620 cases were admitted into the hospital, of which 35 developed pneumonia. Of these latter, 12 died and 23 recovered. In all fatal cases complete

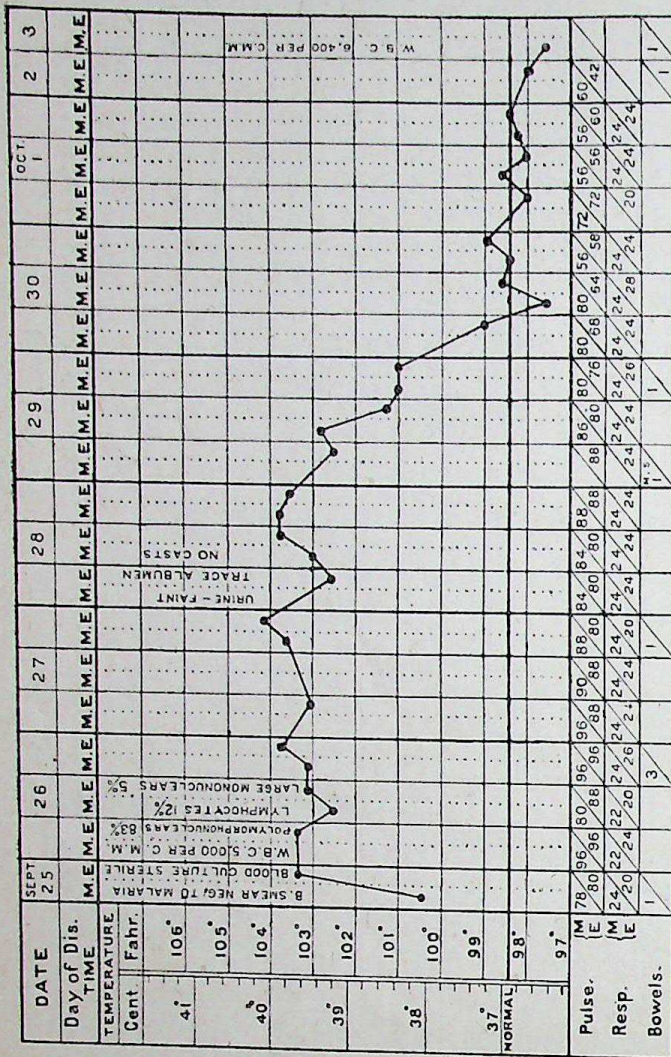
BY CAPTAIN R. N. O. MOYNAN, R.A.M.C. (S.R.), M.B., B.S. (Lond.), AND ASSISTANT SURGEON L. D. C. MENESES, I.M.D.



CATARRHAL TYPE.



BRONCHO-PNEUMONIC TYPE.



BRONCHIAL TYPE.

JAN., 1919.]

post-mortem investigations were made, and in every case extensive broncho-pneumonia was present.

The admissions into this hospital may be grouped into three types:—

1. Mild or catarrhal (three days' fever).
2. Bronchial (five or six days' fever).
3. Broncho-pneumonic.

(1) *Mild or catarrhal*.—Patient is admitted describing sudden onset of symptoms, perhaps 24 hours after arriving in Bombay. He has severe frontal headache and pain in back of eyes. Dull aching pain in muscles of limbs and back, throat a little sore, slight dry cough without expectoration, a few cases give history of vomiting. The majority describe a raw feeling behind sternum, and a few have abdominal pain and complain of flatulence and diarrhoea. There is complete loss of appetite, patient looked flushed and feverish, conjunctivæ suffused, tongue furred and dry, edges clean, fauces and uvula almost invariably show red spots of injection. On physical examination there is nothing abnormal to be noted. Twenty-four hours after onset the patient still complains of chest being raw and sore, and perhaps coughs up a little tenacious sputum. No physical signs in chest. On the 4th day of disease headache disappears, cough is better, temperature normal, pulse slows down to an average of 64 and convalescence is established. Chart appended.

(2) *Bronchial type*.—The onset is sudden as in the catarrhal type, but the symptoms are rather more severe. Cough and sore-throat are marked and become distinctly more troublesome during the course of illness. In several of these cases pain in the back and limbs have been absent, but the rawness of the chest has been a prominent symptom. Voice is hoarse. On physical examination tongue is furred, edges clean, throat shows patchy injection of fauces and uvula. Chest reveals rhonchi at one or both bases, but no dullness or signs of consolidated lung. After the first 48 hours headache gets worse, and large quantity of frothy tenacious sputum is coughed up. Perhaps now, in addition to the rhonchi, a few fine crepitations here and there will be discerned. The condition is practically one of acute bronchitis. On the sixth day of illness symptoms abate as rapidly as they commenced. Headache disappears, cough becomes better, temperature drops to normal, and pulse slows down. Chart appended.

(3) *Broncho-pneumonic type*.—In this type of case the onset is very similar to the other two, with fever, pain in the back, general malaise, headache, slight cough, and sore-throat. In a few cases pain is very marked in the joints and coryza very prominent. Here again the soreness over sternum on coughing is very marked. Physical signs—tongue dry and furred, throat shows patchy injection. No physical signs in chest.

On the fourth day of illness, in two of the cases the condition of the throat was unusual, and both afterwards came to the *post-mortem* room. Here the whole of the fauces and back of the soft palate was inflamed and of a uniform dusky-red cyanotic colour. For a few days patient's condition remains the same, the cough getting perhaps a little worse. About the fourth or fifth day of illness there are a few rhonchi at the bases, and the patient will probably cough up a little blood-stained sputum. Now on careful examination, a patch of bronchial breathing, with an impaired note over it, will be discovered perhaps high up in the axilla. Fine metallic crepitations are heard, and increased vocal fremitus resonance and pectoriloquy. These signs will extend within the next two or three days, the patient perhaps complaining of referred abdominal pain. Patient is very cyanosed, respirations frequent, and general condition grave. Heart keeps good, and six days after the onset of pneumonic symptoms, there is rapid improvement. Cough becomes easier, temperature falls to normal, physical signs are less marked, and convalescence established. In fatal cases of this type cyanosis becomes more marked, mental symptoms exceedingly common. Patient is delirious, struggles with his attendant and tries to get out of bed, pulse becomes weak and patient dies from toxæmia.

COMPLICATIONS AND SEQUELÆ.

(1) *Nephritis*—is the most common complication in the third type described, the urine reveals a high specific gravity, albumen ranging from .01 to .4 per cent., casts, mostly of the hyaline and granular type, are common. In some cases red blood cells are present in the urine.

(2) *Meningitis*—occurred in one fatal case together with pneumonia. Onset is very acute, patient, apparently slightly ill on admission, presented the next day all the typical symptoms of meningitis and died the same evening. Cerebro-spinal fluid under pressure and very turbid, full of leucocytes. Pneumococci were found.

(3) *Pneumococcal septicæmia*.—Three cases of this type occurred and were all fatal.

(4) *Otitis media*.—A patient who has never had previous ear trouble complains of sharp pain in one or both ears for one or two days, and perhaps on the third day there is a slight purulent discharge. In one case a pure culture of *B. pyocyaneus* was obtained from the ear discharge.

Treatment.—The majority of cases were treated as a matter of routine with 15 grains sodii salicylatis four-hourly with inhalations of tr. benz: compound and expectorant mixtures. On admission, all cases had their throats swabbed with equal parts of 1 in 1000 hydrarg. perchlor. and glycerine and were given thymol gargles (1 in 500). In the severe cases of pneumonia, treatment was largely

symptomatic. The greatest difficulty was met with in the severe cases with delirium, in which death threatened from exhaustion. It is beyond question that the lives of two of these were saved by hypodermic injections of morphia, 1/3 grains, while 40-grain doses of pot. brom. were useful in other cases. In one of the worst cases venesection was performed and 16 ounces of blood removed. The result was not satisfactory. Oxygen seemed to have very little effect in the severe cases of pneumonia. The free use of salines seemed of benefit.

Prognosis.—The prognosis in the catarrhal and bronchial types is good. The incidence of broncho-pneumonia was low—5·6 per cent.—but the mortality for the broncho-pneumonia type was high, being 34 per cent. Cases that were apparently desperate often recovered. Violent delirium, increasing cyanosis, the rapid spread of the disease or œdema of the upper lobes, meningeal complications, old lung disease, all add to the high rate of mortality. Two cases had old empyema scars and were both fatal. Most of the cases that were fatal had been ill some days previous to admission.

POST-MORTEM APPEARANCES.

Careful *post-mortem* examinations were done on the twelve deaths referred to, and were practically alike in all cases.

Brain.—The meninges showed slight congestion. No other abnormality except in the one case of meningitis, where there was acute congestion of the meninges, a purulent exudation in the cerebral sulci, injection of the choroid plexus and flakes of lymph in the lateral ventricles. The spinal cord showed a similar condition. Both arachnoid and pia being glued to the surface of the cord by the exudate. There was injection on surface of cord.

Trachea and bronchi—showed acute congestion and inflammation throughout their course. In two cases there was a small patch of hæmorrhage on the laryngeal surface of the epiglottis.

Lungs.—As a rule the pleura showed no pathological changes except as the result of old disease (empyema in two cases). In one case the lung showed two areas of infarction, sharply defined red patches the size of a shilling projecting on the surface of the pleura, quite solid and firm on section. In all cases practically every lobe of the lungs was involved. The most prominent feature in the lung condition was the extent of the pathological change. Practically the whole of both lungs being in some state of pneumonic change early or late. The right lower lobe would be in a state of red hepatization, the middle œdematous, and the right upper in a state of engorgement commencing hepatization.

Similar condition would be found in the left lung. Small sub-pleural hæmorrhages were common, but in no case was there pleurisy, either fibronous or with effusion.

Bronchial glands were enlarged, soft and hæmorrhagic.

Spleen—shows a state of acute congestion. Capsule distended and the organ is enlarged, soft and diffuent. On section the pulp is soft and friable.

Kidneys.—Congested and enlarged. Capsule strips easily, petechial hæmorrhages on the surface of the organ. Cortex swollen. Minute hæmorrhages in the pelvis.

ÆTIOLOGY.

The epidemic is apparently spread by direct contact, and the period of incubation varies from a few hours to three days. Average age incidence 28 years. Bacteriological investigations were made from naso-pharyngeal swabs, sputum, blood cultures, cerebro-spinal fluid and post-mortem from the lung and spleen juice.

No interest was taken in the organisms present in the bacterial flora of the respiratory tract other than those shown below:—

Results of bacteriological examinations.*

	Total number examined.	Gram-pos. pleomorphic diplococcus found in.	Gram-neg. bacilli found in (Pfeiffer's bacillus.)	Gram-pos. diplococcus (pneumococcus).
Naso-pharyngeal swabs—smears ...	80	58	27	42
" " " culture ...	50	38	...	19
Sputum smear ...	80	69	54	46
" " " culture ...	50	43	3	13
Blood cultures ...	68	...	...	3
Cerebro-spinal fluid smears ...	4	...	...	1
" " " culture ...	4	...	...	1
Lung juice (P.M.) smears ...	12	8	2	12
" " " culture ...	12	5	2	7
Spleen juice (P. M.) smears ...	12	...	...	4
" " " culture ...	12	...	...	3

* Media employed: Trypsin agar, fresh blood-smear agar and serum agar.

From the above it will be seen that the organism most frequently found was a Gram-pos. diplococcus which, when present, was always the predominating organism. It was frequently obtained in pure culture from the sputum. This organism differs in many respects from Fraenkel's pneumococcus and has the following characters. It grows on agar in minute circular colonies which attain their maximum after 48 hours. They vary in size, are small, discrete, opaque and coarsely granular and have a dry appearance; they have a raised centre and a light wavy edge. In Bouillon after 48 hours there is a granular deposit at the bottom of the tube. The upper

part of the fluid remains clear. It is of a pleomorphic nature, and produced acid in glucose and saccharose, and acid and gas in maltose.

In fluid media and moist agar the organism tends to grow in chains as a diplo (?) streptococcus.

In the few instances in which Pfeiffer's bacillus was cultured all attempts at sub-culturing failed.

We suggest that, although the epidemic may possibly be due to Pfeiffer's bacillus in the beginning, yet the main pathogenic organisms are the Gram-pos. pleomorphic diplococcus and pneumococcus.

Whereas Pfeiffer's bacillus has been found in very few cases, the Gram-pos. pleomorphic diplococcus has been predominant in the material examined. The latter organism was found in 40 per cent. of the cases in the first epidemic.

The whole condition is an infection of the respiratory tract, commencing in the naso-pharynx and spreading directly so as to give rise eventually to the three types of cases described.

A Mirror of Hospital Practice.

THE TREATMENT OF PANOPHTHALMITIS.*

By A. J. E. LISTER, M.B., B.S. (Lond.), F.R.C.S. (Eng.).
MAJOR, I.M.S.,

Ophthalmic Surgeon, King George's Medical College, Lucknow.

THIS condition is particularly common in India. Its treatment, therefore, is of special importance to medical men in India. My experience is that Indian patients have a rooted objection to removal of the eyeball. The usual result in the case of hospital patients of suggesting it, is a hasty departure from the out-patient room. This leads to many eyes being left in which ought to be excised early, with the result that panophthalmitis often occurs.

There are three surgical methods ordinarily employed for the treatment of this condition.

The simplest is to incise the cornea and to allow the pus to escape. This gives relief to the pain, but it takes a long time for the eye to quiet down, after this procedure, with a consequent increased danger of complications. Under certain conditions it may be all that it is possible to do.

The other more usual methods are enucleation or evisceration of the eyeball.

The majority of ophthalmic surgeons, I think, are in favour of evisceration, as deaths have occurred after enucleation from a spread of the infection along the sheaths of the optic nerve to

the meninges. This complication, however, is not altogether excluded by adopting evisceration, but the risk is much diminished.

In both procedures there is a risk of sympathetic ophthalmia in the other eye.

In evisceration the usual practice is to incise or excise the cornea and to scrape out the contents of the globe with a curette, the interior of which is then doused with an antiseptic lotion, or swabbed out with an antiseptic, the nature of which varies with different surgeons.

This was the operation I did till quite recently.

After it, there is often a good deal of chemosis of the conjunctiva and swelling of the upper lid, and, still more important, severe and persistent pain, which is sometimes of the nature of a severe neuralgic headache. As the patient has often only resorted to operation to obtain relief from pain, much disappointment is caused. The pain in one case I had was very similar to that of acute glaucoma. This case made me very dissatisfied with the operation, and set me thinking. Compression of the ciliary nerves probably is an important factor in the pain of acute glaucoma. I thought if I removed the ciliary region in these cases I should diminish the post-operative pain. I tried this procedure and the result in my experience was a great diminution in the pain after operation. Some patients hardly complaining at all, after coming round from the anæsthetic.

The steps of the operation are as follows:—

1. The patient is given a general anæsthetic.
2. When the patient is under the anæsthetic, the eye is carefully cleaned and the conjunctival sac is well irrigated with 1 in 3000 perchloride of mercury lotion, as it is usually difficult to cleanse the eye properly before on account of the pain.
3. A cuff of conjunctiva is then turned back by making an incision round the scleral margin, and separating it carefully all round. The cuff is separated from the globe far enough back to expose the ciliary region well.
4. By means of a Graefe's knife the sclera is transixed behind the ciliary region and the anterior segment of the eyeball removed.
5. The contents of the globe are then thoroughly scraped out, the cavity well doused with 1 in 2000 perchloride of mercury lotion and a dressing applied.
6. The eye is dressed daily till the wound heals.

Advantages of this procedure:

It is less liable to be followed by meningitis than enucleation. The danger of this condition is sometimes lost sight of. It is illustrated by the following case, which occurred in my practice. An old lady came complaining of pain in her left eye, there was obviously panophthalmitis, which did not appear very far advanced. There was no corneal ulceration or signs of perforation of the sclera.

As they came from a distance I decided to remove the globe.

* Abstract of a Paper read before the Clinical Society at King George's Medical College, February, 1916.

away, and in my experience convalescence is quickest after this procedure.

When I came to do so, all went well till I was actually extracting the eyeball. The suppuration had however caused ulceration of the posterior portion of the sclera, with the result that it gave way and pus escaped into the orbit.

The orbital cavity was very thoroughly doused with warm 1 in 2000 perchloride of mercury lotion and the eye dressed as usual.

The patient, a very ill-nourished, feeble, old woman, seemed to do well for three days. On the third day she became very collapsed and unconscious, and meningeal symptoms set in. She was removed from hospital by her friends, in spite of our protests, in a moribund condition and I have not the slightest doubt died soon after. Such a case illustrates well the danger of removing an eyeball in panophthalmitis. It is often done, I know, with impunity in spite of its well-known danger, and I think one of the reasons which leads surgeons to do it is to avoid the post-operative pain and trouble caused by the ordinary method of evisceration. This, in my experience, is often a source of great trouble, and I have known it lead to a change of doctor after an evisceration, a matter which cannot be ignored in practice! In many cases this procedure leaves a perfectly movable stump, a condition which does not often occur after the ordinary excision; in any case a better stump is left than is usually the case after an excision in panophthalmitis. As the anterior segment of the eyeball is completely removed, freer access to the interior of the globe is possible than in the ordinary operation for evisceration. Its contents, therefore, can be removed with greater ease and certainty.

As Schieck, Schmidt Rimpler, de Schweinitz, Waldespuhl, and others have reported cases of sympathetic ophthalmia following evisceration, in which investigation showed fragments of uveal tissue left after the operation lining the sclera, this is a practical advantage worth consideration.

You can also tell the patient you are not going to remove the eyeball. This in India may lead a patient to consent to the operation, when he would refuse an enucleation, and so save him much suffering and possible loss of the other eye from sympathetic ophthalmia.

The advantage over the ordinary method of exenteration is that it is very much less painful. This, as pointed out before, is a factor of prime importance in practice. Dr. Brahma Gupta, my Demonstrator, is here and will bear me out in this point. Indeed, it is due to his emphatic reports as to the comparative freedom of patients from pain after this operation, that I have been encouraged to continue it.

You may ask, is this operation sufficiently safe for us to do it without undue anxiety? I have no

hesitation in saying, it is. I started doing this operation first in 1915 and since then have done 11 cases. This will of course be not enough to convince you, though all did well. I recently, however, saw a somewhat similar operation described which involves even more disturbance of the tissues than in the procedure just described.

You will find this on page 110 of the Memorandum on the treatment of wounds in war, published by the Army Medical Department, July 1915. This is a guarantee that it is considered a safe procedure by experienced men.

The steps of the operation here recommended are:—

1. Evisceration of the globe.
2. Division of the muscles.
3. The sclerotic is then pulled forward, and divided far back leaving only a frill round the optic nerve.

These steps are modified in certain details in different conditions of the eye.

Addendum. Since reading this paper, which has been delayed in publication owing to press of work, I have performed this operation in a large number of additional cases, and many cases have been done by my Demonstrator, Dr. Brahma Gupta. Further experience has only confirmed its utility. I now use it as a routine treatment. In certain advanced cases I now, sometimes, after making an incision through the sclera at the desired spot, finish the removal of the anterior segment with scissors. This in some cases renders the removal easier. If the conjunctiva is very infiltrated and friable, as it often is in the very late cases, I think it is advisable to remove more of the sclera, as the conjunctiva is apt to retract, allowing the edges of the sclera to separate the edges of the conjunctiva, thus delaying healing.

Similar procedures have been advocated since the reading of this paper, in the ophthalmic press, but I have not yet seen the exact procedure I describe, recommended in any of the literature I have access to. My experience shows that in the cases where the sclera is divided just behind the ciliary region an excellent movable stump results in most cases, as the attachments of the muscles have been little interfered with. It is obvious that whatever other advantages it may possess, the leaving only of a scleral ring cannot leave such a good stump as the procedure I describe.

In the military practice, where infected particles may have been driven into the sclera, there are obvious advantages in removing as much of the sclera as possible. This is not the case in civil practice. I think those who try the procedure I describe will be astonished, as I was myself, to find what an excellent, movable stump results in many cases, especially in young patients.

JAN., 1919.]

A DIVIDING STRETCHER.

BY C. G. TAYLOR,

ASSISTANT SURGEON,

Ambulance Transport "Syria."

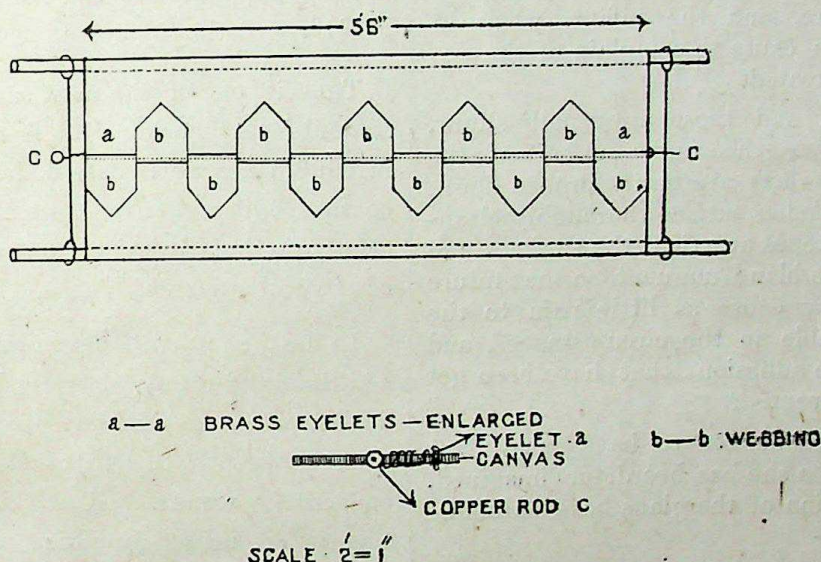
AT the Government Ophthalmic Hospital, Madras, the necessity for keeping patients as quiet as possible after extraction of cataract and other intra-ocular operations was very thoroughly impressed on the whole staff, yet, often when from 25 to 40 operations were done in one morning, a certain amount of hustling was inevitable.

Though very few cases occurred in which untoward results were directly attributable to some strain or exertion on the part of the patient while being conveyed from the operation table to bed, still the marring of an otherwise successful operation was fraught with such momentous consequences as to make one set about devising means of prevention.

A slight modification of the above pattern was suggested to Lieutenant-Colonel R. H. Elliot, I.M.S., then Superintendent, Government Ophthalmic Hospital, Madras, and with his approval was taken into use, effectually solving the difficulty.

In this latter, the canvas portion is slit down the centre, or rather the unstitched canvas is, and the two selvages turned toward the middle. The cut edges are hemmed as in the old pattern. Loops of 6" girth webbing are sewn on the canvas along the selvages alternately so that loops on one side fit in between spaces on the other, and by passing a stout copper rod through the loops the two halves are laced together.

The canvas laced up is placed on the operation table and the patient lies on this as on the former pattern. (The copper rod causes no inconvenience as it is well covered by girthing and canvas.) After the operation, the bamboo poles and end rods are put in and the patient on reaching his bed is put on it.



The stretcher in use up to March, 1913, was a simple canvas one about 5' 8" x 2'. In the canvas were two wide hems or sleeves at the sides. This was placed on the table and the patient lay on it throughout the operation, and when it was over bamboo poles were slid into the hem on each side and two looped iron rods passed over the ends of the poles to keep the stretcher from sagging.

The patient was then lifted on to a wheeled carriage and taken to his bed-side.

Here the difficulty of lifting the patient off the stretcher into bed without any exertion on his part was often very apparent. Though warned to lie "limp" very few really did so but subconsciously "stiffened." Further, the two stretcher-bearers had to hold the stretcher close to the bed and three or more assistants were needed to lift the patient into bed.

Now, the two end rods being removed and the copper rod withdrawn, the two canvas halves can be drawn apart from under the patient without disturbing him in the least. The two stretcher-bearers require no assistance in unloading.

It can be placed under a patient by rolling it up half way after the manner of a "draw sheet."

While its scope is limited to employment away from actual fighting on account of its complexity, still in serious cases and severe wounds it lessens the patients' sufferings during removal from stretcher to bed and *vice versa*.

Stretchers of this pattern are in use at the Government Maternity and Gynaecological Hospital and General Hospital, Madras, and on the hospital ship *Madras*.

It is much lighter than the Army Regulation, and if it is necessary to move a patient in an

ambulance fitted to take the regulation stretcher, the dividing stretcher can be placed on the other.

CIRCUMCISION.

BY W. D. SUTHERLAND, M.D.,

LIEUT.-COLONEL, I.M.S.

THIS little mutilation is seldom necessary. I have often been requested to circumcise infants, but have not done the operation, for the reasons set forth below:—

What I did do in cases of phimosis and found to be adequate, was to slit the under-surface of the prepuce longitudinally so as to sever the constriction-ring, and then to stitch the ends of the incision to each other so as to make the wound transverse and thus widen the tight part of the prepuce. For some six days after the operation the prepuce is œdematous, but thereafter everything is as before, and the infant, when he grows up, has no cause to complain of the way in which he was treated.

Any adhesions, and these are usually slight, that exist between the under-surface of the prepuce and the glans are easily broken down, and the smegma-laden surface thoroughly cleaned. After the stitches are tied the surfaces are smeared with some bland unguent, so that future manipulations may cause as little pain to the infant as is possible in the circumstances, and the renewal of the adhesions that have been got rid of may be prevented.

Many a mother desires to have her infant circumcised because she has heard, or imagined, that the denudation of the glans has the following advantages:—

Cleanliness.—To me the question as to whether it is more cleanly to remove the secretion of the *glandula odorifera* daily by ablution, or to have it continuously removed by the wearing apparel seems to admit of only one answer, when the points noted below have been considered.

"Bad habits."—I am sure that boys will be boys, whether circumcised or not, and that the removal of the prepuce does not tend to do what the mother hopes it will do.

Protection against disease.—The preputial secretion is a natural unguent which keeps the skin of the parts elastic and lissom. The circumcised glans, on the other hand, has leathery integument, which easily develops a fissure, through which the *treponema pallidum* may enter.

Besides, we have two reasons against the denudation of the glans, that to me at least appear to merit consideration. It has not

appear to merit consideration. It has not æsthetics in its favour, for if this were the case then we may be sure that artistic Greeks would have seen to it that their statues, which are for all time exponents of the best types of the human form, would show the denuded glans.

As a matter of fact that very primitive contrivance, the intromittent organ, seemed to them to be so far from æsthetically commendable that in their statues they minimised its proportions. Last but not least we have the fact that the delicate sensibility of the parts which nature has in view is blunted by the results of circumcision.

REVIEW.

A Manual of Physiology.—By G. N. STEWART, M.D. Eighth Edition. Demy 8vo, pages xxiv + 1245. Plates 1 coloured and figures in text 492. Price 21s. net. London: Ballière, Tindall & Cox, 1918.

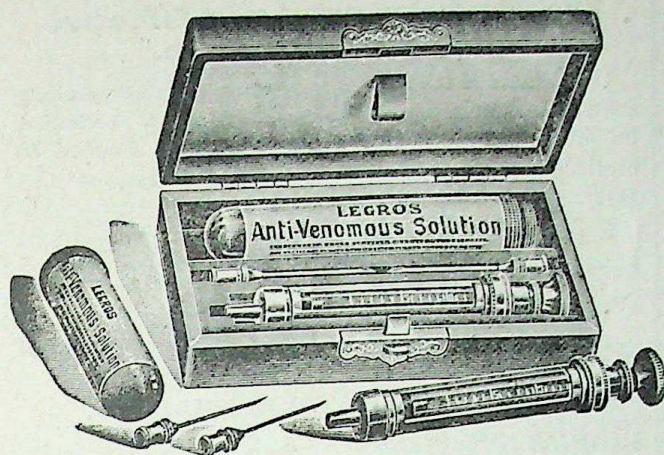
THIS is one of the most successful of medical students' text books. Its first edition appeared in 1896, since which date no less than 12 reprints or new editions have appeared, which shows clearly the hold it has got on several generations of medical students.

In the present edition we find several important additions and revisions, especially in the portions dealing with the chemical phenomena of respiration, and with the functions of the so-called endocrine organs. The filtration-absorption theory of urine formation as formulated by Professor Cushny is given in considerable detail.

The useful practical exercises have been retained. The book is very well illustrated, and we have no doubt that the eighth new edition will be found as useful and as accurate as the previous editions. It is at present the standard text-book for students.

THE Oxford Press has in preparation a new book on *The Practice of Medicine in the Tropics*; Sir L. Rogers writes on cholera; Sir Walter Buchanan on cerebrospinal fever; Major J. Cunningham, I.M.S., on hill diarrhoea; Dr. Bahr on dysentery, etc., etc.

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DOSE.—For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

LEGROS' SOLUTION AND SNAKE BITES.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I beg to send you notes on the use of Michel Legros' Anti-Venomous Solution in cases of snake-bite, which may be kindly inserted in the *Indian Medical Gazette*.

Recently I was called to see a case of snake-bite. A boy, aged about 18, was bitten on his right foot by a cobra at about 7 A.M. The patient immediately after the bite tied a ligature tightly round the leg below the knee with a rope which he carried with him for his cattle, and cried aloud for help. His neighbours hurried up to the place and killed the serpent, which lay hidden in an adjacent bush. The serpent was 4½ feet long, and its diameter at the middle was 5½ inches; many native *ojhas* assembled and tried their *mantras*. At about 8.30 A.M. symptoms of poisoning developed, notwithstanding the three additional ligatures tied by the men subsequently. I reached the place at 9 A.M., when the condition of the patient was as follows:—Eyes opened and turned upwards, the tongue fixed between the teeth which could not be separated, the heart's beat was very feeble, limbs cold. At once I injected 15 minims of Anti-Venomous Solution on the right forearm and 15 minims in two places on the right thigh, which was much swollen. After ten minutes I again injected 10 minims into the left forearm and 15 minims in two places near the site of the bite, and made several incisions near the site of inoculation and freely rubbed in crystals of Pot. Permang. I left the patient at 1.30 P.M., when he could speak with ease and all the symptoms had considerably subsided. He only complained of severe pain in his right leg, for which I prescribed hot Permang. bath. Next morning the patient was all right.

From the above it will appear that the life of the patient was saved by Michel Legros' Anti-Venomous Solution.

It is a very simple remedy, administration of which requires no special skill; my tube of solution was about a year old, and I understand the solution keeps well for several years.

The following points are most important:—The venom is not, as a rule, carried immediately in its entirety into the circulation (except in cases when the bite has penetrated into a vein, in such cases death may be caused immediately). The venom first reaches the small blood vessels, by its own action on blood the local circulation is arrested, and this prevents the immediate diffusion of the poison throughout the organism.

When the poisoning symptoms have already developed, a dose should be injected into the healthier tissues above the wound and swollen parts. Another should be given in two or three places near the site of the bite. This may be repeated if the condition of the patient becomes more grave. The solution must be injected deeply into the tissues for rapid absorption. Medical practitioners can easily and conveniently carry a tube of solution containing four doses at the nominal cost of Rs. 4 per tube.

Yours, etc.,

BINODPUR, JESSORE, }

20th June, 1917. }

S. G.,

Medical Practitioner.

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UTERO-TOPIQUE
IODARGOL. Direct Intra-uterine Medication.

As a wound dressing Iodargol on account of its antitoxic and dermoplastic action prevents or ameliorates the fever due to infection, cuts short suppuration, eliminates the sloughing portions and cleans the wound, at the same time stimulating epidermisation and cicatrization.

IODEOL OVULES for Vaginitis, Metritis, etc.

IODEOL CAPSULES contain 4 grains of Iodine in each. Never cause Iodism.

More powerful and active than Iodine without its drawbacks.

The treatment of Carbuncles, Boils, Anthrax, Acne, Styes, and diseases arising from **STAPHYLOCOCCUS**.

STANNOXYL

(An Oxide of Tin and Tin Meal
free from Lead.)

A truly scientific production the value of which has been studied very closely. The effect is really wonderful; from the second day of treatment the pain is relieved and the carbuncles begin to dry up, those which are just opening are stopped in their course; the core is not expelled but reabsorbed.

In the majority of cases a complete cure is effected by the fifth or sixth day, it is seldom necessary to take the full 10 days' treatment, and relapses are unknown, indeed it is a specific for diseases arising from Staphylococcus.

The daily dose for Adults is 4 to 8 tablets;

Children, 2 to 4 tablets.

Supplied in vials of 80 tablets.

URASEPTINE

**The Most Powerful and Effective
Urinary Antiseptic.**

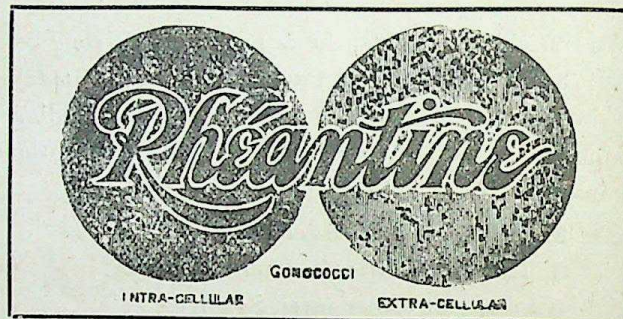
URASEPTINE is a granulated product entirely soluble in water, its bases being Piperazine, Urotropine, Helmitol, Benzoates of Sodium and Lithium. It contains 60 centigrams (10 grs.) of active matter to each teaspoonful.
DOSE.—2—6 teaspoonfuls daily.

It purifies the Urine, and this action is due to its three principal properties:

1. It is a **URINARY ANTISEPTIC.**
2. A **SOLVENT OF URIC ACID** and of **PHOSPHATES.**
3. A **MILD NON-TOXIC DIURETIC.**

INDICATIONS.—Arthritism, Gout, Gravel, Hepatic and Renal Colic, Rheumatism, Calculus, etc., Phosphaturia, Urinary Antisepsis, Pyelitis, Bacteriuria, Cystitis, Prostatitis, Urethritis, Pyuria, Urinary Abscess, Vesical Catarrh, etc.

ANTIGONOCOCCIC



The clinical reports given by various doctors show that Rheantine gives highly satisfactory results, both in acute and chronic forms of Gonorrhœa and also in the various infectious complications due to Neisser's bacillus.

Rheantine is put up in hermetically sealed tins, containing 28 spherules. **Dosage.**—4 spherules a day.

Therapeutic Association of Paris (14th June, 1916): the result of their observations:—

"It is not a rare thing," write these authors, "to observe in the very first days a more or less marked recrudescence of the discharge. This negative phase, which, however, is temporary, is always followed by a well-defined positive phase, in the course of which the characteristics of the urethral pus undergo a rapid change; the discharge, which is at first thick, abundant, and creamy, passes gradually into the hyaline state, diminishes in quantity, and in the majority of cases ceases."

"Under the microscope these successive stages are demonstrated in equally definite stages; whatever may have been the duration of the disease, the characteristics of the pus become rapidly modified; after two or three days' treatment the gonococcus, first intracellular, becomes exterior; it ceases to act as a parasite on the polynuclear leucocytes and the large epithelial cells—one then finds them disseminated outside the leucocytes."

"Finally, some days later, if the administration of Rheantine is continued, the condition undergoes still further change, the gonococci become agglutinated, arranged in a mass, and finally bacteriolysed."

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**Recurrent Fever
SYPHILIS****GALYL****Framboesia and
Sleeping Sickness**

Practical work with GALYL in the shape of

60,000 INTRAVENOUS (Dilute and Concentrated) and **INTRAMUSCULAR INJECTIONS** administered in Military, Naval and the principal General Hospitals throughout the United Kingdom, has demonstrated that this preparation is **more rapid and less toxic** in action than any compound of the "606" group, which accounts for the **consistently excellent clinical results without any undesirable by-effects.**

Forms:

.....FOR INTRAVENOUS INJECTIONS:—

(1) **DILUTE.**—GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate, sterile distilled water only being used for the dissolution.

(2) **CONCENTRATED.**—A special outfit containing one dose GALYL, one ampoule sterilised solution, and one small filter is supplied.

Doses:

0.10—0.15—0.20—0.25—0.30—0.35—0.40

(3) FOR INTRAMUSCULAR INJECTIONS:—
GALYL is supplied in **OILY EMULSION.**

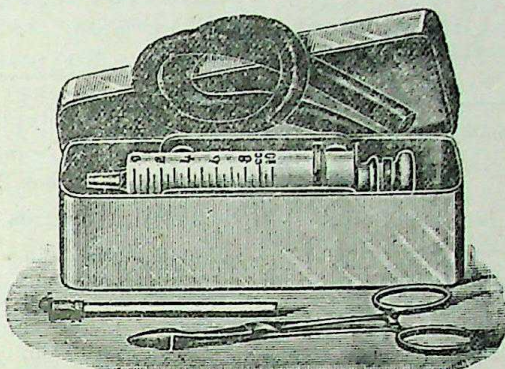
Doses:

0.10—0.15—0.20—0.30—0.40.

POCKET CASE.

Containing the entire instruments (sterilizable) necessary for administering a concentrated intravenous injection of GALYL or other solution.

- 1 India-rubber Tube for constricting the arm.
- 1 Clamp for fixing the rubber band.
- 1 Glass Syringe of 10 c.c. capacity.



- 1 Platinum-iridium Needle, length 4 cm., diameter 0.9, with short bevelled joint and special barrel. Attachable to the syringe without any additional junction.
- 1 Nickel-plated Case to hold all the above.
- 1 Chamois Leather Pouch.
- 1 Glass Filtering Tube, with rubber attachment.

Price complete 30/-**HECTINE**

Formula: Sodil Benzo-sulpho-p-amnia-phenyl arsonas.

Dr. Mouneyrat—the discoverer of Galyl (the well-known and widely adopted French Neo-Salvarsan substitute) and also Hectine, a compound which—though it possesses a very low arsenic percentage and has proved most safe in use—gives remarkably successful clinical results in syphilis and the parasyphilitic affections. Hectine has a record of about one million injections.

Hectine is not only a specific in syphilis, but it acts as a general tonic in the treatment of bloodless and anemic patients and in all cases where **Arsenic** is indicated.

In malaria it acts as a specific owing to its anti-parasitoid and anti-thermic actions; also in tuberculosis, rachitism, neurasthenia, asthma, chorea, skin diseases, etc., etc.

Hectine is supplied in hermetically sealed ampoules for intramuscular injections.

Ampoules A—containing 10 c.g. in 1 c.c.

Ampoules B—containing 20 c.g. in 1 c.c.

Pills (in phials of 24, 10 c.g.)

HECTARGYRE**(Mercurial Salt of Hectine)**

Hectargyre being a **double specific** cures syphilis and all its manifestations more rapidly and more surely than any other mercurial preparation.

As a treatment following Galyl, or *ab initio* in all stages of the disease, Hectargyre is very effective and rapid; it is well tolerated even where prolonged treatment is necessary; the most intractable cases of syphilis have yielded highly satisfactory results.

Hectargyre is supplied in sterile ampoules for intramuscular injections.

Ampoules A containing—

Hectine 10 c.g. } in 1 c.c.
Hg. 1 c.g. }

Ampoules B containing—

Hectine 20 c.g. } in 1 c.c.
Hg. 1½ c.g. }

Pills containing—

Hectine 10 c.g.
Protoid of Hg. 1 c.g.
Opium Extract 1 c.g.
(In phials of 24 pills.)

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NEOCAINE-SURRENINE

Neocaine is a synthetic product of French manufacture.

A Perfect COCAINE SUBSTITUTE of Low Toxicity.

A White Powder, readily soluble in water. Analgesic power, duration, and rapidity of action quite equal to Cocaine.

Toxicity less than one-sixth.

Therapeutical effects identical with Cocaine (excepting as an exhilarant) for Dental or Surgical, local and Spinal Anæsthesia, Lozenges, Snuffs, Ointments, &c.

Composition of Neocaine-Surrenine.

Pure Neocaine	...	...	5 c.g.
Acid Borate of Adrenalin (Takamine)	..	...	0.1 m.g.

Pure Neocaine is also supplied.

FORMS.—Powder in capsules and phials. Ready prepared solutions in Ampoules (various percentages), and Ampoules of sterilised liquid for making solutions.

THE MEDICAL TREATMENT OF CANCER.

CUPRASE

CUPRASE is a colloidal copper hydroxide which is obtained chemically by the reduction of salts of copper in the presence of albuminosic acid.

As a result of over ten years' research work on Cancer, Dr. Gaube du Gers produced a new Colloidal Copper Hydroxide which has given remarkable results in *arresting the progress of the disease*, with loss of pain, and great improvement in the general condition of the patient.

The numerous clinical reports from Doctors of repute in various countries, give cases of a great variety. In all of these pain has been eliminated, and a good percentage of cures are claimed, and in no instance any undesirable effects.

Its easy application (intramuscular injections) places it within the reach of all practitioners. It is not toxic.

Disappearance of the Pain.

Return of Sleep.

Increase of Appetite.

Colour and Strength.

Supplied in boxes of 8 ampoules.

WARWICKSHIRE, July 1st, 1917.

DEAR SIR,—Will you please send me another box of Cuprase ampoules. The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer—the cauliflower-like growth has disappeared with its offensive discharge.

This case was given three months' life by a Specialist, being inoperable.

Yours faithfully,

(Signed) B—B—, M.R.C.S., L.R.C.P.

ANTITYPHOID

Inoculation by the gastro-intestinal tract



TYPHOID BACILLI

The results of **4,000** applications of **Enterovaccin** carried out by approximately 200 Doctors are as follows:

1. **No one** who has been treated with **Enterovaccin** has been attacked by typhoid fever.
2. This method of immunisation is without risk.
3. There is no contra-indication.

Enterovaccin is put up in hermetically sealed tins containing 28 spherules, sufficient for a complete treatment (one week). Each spherule contains per milligramme:

300 millions Eberth bacilli. 180 millions coli bacilli. 120 millions paratyphoid bacilli.

IODEOL

Perfectly tolerated. Never causes Iodism.

Each capsule contains 4 grains of Colloidal Iodine in the most minute form of subdivision known.

It is administered by
**INTRAMUSCULAR
INJECTION**

for

Pneumococcal Disease
—Simple and Infective
and
Broncho-Pneumonia

Bronchitis
Pulmonary Congestion
TUBERCULOSIS, &c.

By the Mouth (Capsules):

Syphilis, or wherever Iodides are indicated. **Iodeol** is ten times more active and does not cause Iodism.

Externally (Liquid):

Contains 50 per cent. Colloidal Iodine (must not be used for injection), ten times more active than painting with Iodine tincture—does not produce erythema or irritation. Absorption is extremely rapid.

For Gynaecology (Ovules):

These are introduced into the vagina, slowly discharge the Iodine, which penetrates deeply into the vaginal mucous membrane, giving rapid relief from congestion and pain.

Destructive to the micro-organisms.

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Indian Medical Gazette. JANUARY.

ANNUS MEDICUS, 1918.

THE Great War has been the main pre-occupation of the world during most of the year 1918, but in October and November the cause of the Allies proved triumphant and the German debacle led to the Armistice, and the discussion of Peace terms is about to follow.

This great change will mean much to the medical services in India, and early, we hope, in the new year we may look forward to one of results of peace—in demobilization and the re-opening of long deferred leave and furlough.

For the Indian Medical Service the year has been one of expectation. The often-talked-of station hospital system for Indian troops has at last been set agoing, and recently new scales of pay have been sanctioned. We regret to see that these provide no substantial benefit to the men employed: some officers will get charge allowances and second-in-command allowances, but all will lose their regimental allowances, and as far as we can see the new rates will fail to give content.

As for the civil side of the Service, even the very meagre increments, proposed as a temporary measure by the Royal Commission on the Public Services, have not yet been granted, and there is a very strong feeling that such petty improvements will bring neither content to the service, nor will they be in any way attractive to would-be recruits. Something very much more radical is needed before men at Home will volunteer to enter the service, especially as the losses in the War and the marked shortage of medical men at Home have greatly raised the value of medical work at Home.

The Secretary of State, ably backed by the British Medical Association, has realised and has demonstrated the great need of reform, but up to the time of writing nothing has been announced.

In our own columns, during the year attention has been devoted to the many subjects, e.g., war surgery, on which we have published several valuable papers. The value of quinine as a prophylactic has been questioned and has been

ably defended, its curative value is everywhere acknowledged, but there has been considerable discussion as to the best means of administering it.

The discussions on plague have mainly been around the question of killing rats, which harbour the plague-bearing fleas. It seems to us that the objections taken to rat-extermination as a plague preventive measure have been mainly due to the difficulty of doing the work thoroughly. Spasmodic rat-killing will always be of little use, but there is much evidence to show that systematic, thorough and persistent campaigns against rats are of great value and importance, and we again call attention to the memorandum issued by the Sanitary Commissioner with the Government of India on this subject (*Indian Medical Gazette*, page 284, August). The prevalence of hookworm as a debilitating agency has received much attention, and in Bengal His Excellency the Governor has inaugurated a campaign against this parasite.

The treatment of leprosy by gynocardates has been much discussed, and we have published several papers which show that very great amelioration and very great comfort to the patient will certainly follow a course of treatment by these drugs.

Other papers of value on a variety of subjects have appeared in our columns, among which we may mention Captain Finny's paper on heatstroke or sunstroke, Dr. Nicholl's on etiology of sprue, Dr. K. K. Chatterjee's on the value of margosic acid (*nim*), and two good papers on actinomycosis.

Influenza has reappeared in pandemic form all over India. The outbreak which broke out in Bombay in July has been fully reported on by Captain Phipson. In its incidence and rapid spread it recalls forcibly the invasion of thirty years ago, and clinically the so-called "Spanish" influenza of this year differs but little if at all from the so-called "Russian" influenza of 1889-90.

Among books published by medical officers and professional men in India during the past year we may mention Elliot's books on Glaucoma, Waters' on Diabetes, Deare's new edition of *Materia Medica*, and Muir's *Treatment of Kala-azar*. We are glad to have been able to publish the transactions of the War Hospitals Societies of Bombay, and would welcome more such societies.

Lieutenant-Colonel Sprawson and Major Mackie published a valuable preliminary note on what seemed to be a new long-continued fever in Mesopotamia.

It yet remains to be proved that this is a separate entity and work on the subject continues. Under war conditions, with the necessity of removing the sick to the base, it is obviously very difficult for such very long cases to be followed up in the way necessary.

The I. M. S. and the medical profession have come out well in the various honours lists published, and doubtless after the war more well earned honours will have to be recorded.

The beginning of the year saw the place of Sir Pardey Lukis filled by the appointment as Director-General of Major-General W. R. Edwards, C.B., C.M.G., an appointment universally approved of.

During the year two Colonel's appointments were converted into two Surgeon-Generalships, and no better choice could have been made than that of Colonels Manifold and Hehir. Colonel W. R. B. Robinson, C.B., succeeded Major-General Edwards as Surgeon-General with the Government of Bengal, and Colonel Hendley left the Punjab, where he served so long, to take up a Surgeon-Generalship at Quetta.

It is to be hoped that these Surgeon-Generalships as well as the new Colonelcies will not merely be for the period of the War.

The year which has passed has deprived the Service of many well-known men, either by death or retirement. Among those who retired has been Major-General W. B. Bannerman, C.S.I., who retired from Madras, and has been succeeded by Major-General G. G. Giffard, C.S.I.; Surgeon-General Tom Grainger, C.B., went Home early last year and has since retired. Among more junior men who have retired we may mention Lieutenant-Colonel J. G. Jordan, Lieutenant-Colonel D. T. Lane, Lieutenant-Colonel S. P. James.

Death too has been busy and many well-known names have disappeared from the lists, among whom we may mention Deputy Surgeon-General J. H. Lock, Colonel C. F. Willis, C.B., Surgeon-Major J. Robb, Lieutenant-Colonel Edwin Dobson—drowned in the torpedoing of a ship *en route* to South Africa in the last month of the hostilities,—Lieutenant-Colonel Robert Bird, Lieutenant-Colonel A. L. Duke, Lieutenant-

Colonel A. J. Sergeant, Lieutenant-Colonel W. H. Quicke, Lieutenant-Colonel Moorhead, and Lieutenant-Colonel M. A. T. Collie—all men of mark in their day. The veteran Surgeon-General Sir Adam Scott-Reid, too, has died, as also Sir Alexander Christison, *Bart.*, the doyen of the I.M.S., while Captain A. K. Sinha has been killed in action and Temporary Lieutenant K. H. Bhat was drowned while on active service. Dr. W. C. Hossack died in Calcutta in the beginning of the year.

We must again express our indebtedness to Lieutenant-Colonel D. G. Crawford, I.M.S. (*retd.*), who has so regularly supplied us with notes on the long lists of medical officers who perished in the War.

Peace is now in sight, and may it bring contentment to the service and to the medical profession in India!

Current Topics.

PAY AND ALLOWANCES, I. M. S.

For the Military side of the Indian Medical Service the following rates of pay are announced in Appendix B to Army Instruction (India) No. 1343 of 1918, *i.e.*, the instruction dealing with the establishment of the station hospital system (*vide* below) for Indian troops.

With effect from the 1st December, 1918, the grade pay of officers of the Indian Medical Service in military employment (with the exception of those holding appointments carrying staff pay or consolidated pay, or those for which special rates of pay have been authorised) will be as follows:—

	Rs. per ensem.
Lieutenant-Colonel specially selected for increased pay	1,250
Lieutenant-Colonel	1,100
Major, after 3 years' service as Major	825
Major	750
Captain, after 10 years' total service	700
" " 7 " "	650
" " 5 " "	600
Captain	550
Lieutenant	450

Separate orders will be issued in regard to the emoluments of temporary officers of the Indian Medical Service under the scheme.

2. The above rates of pay represent the total remuneration for duties which officers of the Indian Medical Service (other than those holding appointments which carry staff or consolidated pay or for which special rates of pay have been authorised) may be called on to perform.

The following are also exceptions to this rule:—

(a) The extra allowances included in Army Regulations, India, Volume I, paragraph 11 (a), except that authorised for medical charge of the Cavalry of the Corps of Guides, which will be abolished:

JAN., 1919.]

(b) the specialist allowance authorised in Army Regulations, India, Volume I, paragraph 155 (d) (iv);
(c) the charge allowances referred to in paragraph 5 of this appendix.

3. The allowances for the additional and temporary medical charge of troops and followers, admissible to officers of the Royal Army Medical Corps, and Indian Medical Service, under Army Regulations, India, Volume I, paragraphs 11 (b), (c) and (d), and 117, and also all similar charge allowances for labour corps, etc., will be abolished.

4. The horse allowance at present admissible to officers of the Indian Medical Service in medical charge of Indian Cavalry regiments (Army Regulations, India, Volume I, paragraph 264) will be abolished.

5. Charge allowance for officers commanding Indian station hospitals and second-in-command allowance for officers appointed second-in-command of first and second class Indian station hospitals, will be admissible at the following rates in addition to the rates of grade pay shown in paragraph 1 above:—

(a) Charge allowance.

		Rs. per mensem.
1st class hospitals	...	240
2nd " "	...	180
3rd " "	...	120
4th and 5th class hospitals	...	Nil.

(b) Second-in-command allowance.

1st class hospitals	...	120
2nd " "	...	90

6. Officers, except those holding appointments which carry staff or consolidated pay, will, while on general leave in India, draw grade pay according to the scale given in paragraph 1 of this appendix.

7. The rates of pay and the rules governing the pay (including the pay while on general leave in India) of officers holding appointments which carry staff pay or consolidated pay will remain as at present.

8. If, under the new arrangements, the emoluments of any officer, now serving, fall below the present consolidated pay of an officer of his seniority in charge of a regiment (Army Regulations, India, Volume I, paragraph 11), the case should be submitted for the orders of the Government of India. The term emoluments, as used here, does not include the specialist allowance admissible under Army Regulations, India, Volume I, paragraph 155 (d) (iv).

Regimental pay being thus abolished, it is worth while comparing the new and the old rates of pay.

RANK.	Grade pay, old.	Grade pay, new.
	Rupees per mensem.	Rupees per month.
Lieutenant...	350	450
Captain	400	550
Captain (after 5 years)	450	600
" " 7 "	500	650
" " 10 "	550	700
Major	650	750
Major (after 3 years)	750	825
Lieutenant-Colonel	900	1,100
Lieutenant-Colonel (after 25 years)	900	.....
Lieutenant-Colonel (selected list)	1,000	1,250

So far so good—but as regimental allowances are abolished we must compare the old regimental pay with the new grade pay *plus* charge allowances. We may assume that Lieutenants

and junior Captains are usually only in officiating charge of a regiment, and we may also assume that officers of this rank are not usually in charge of station hospitals and consequently will not usually get the "charge allowances."

Rank.	Regimental pay.	New pay including charge allowances.	Total new.
	Rs.	Rs.	Rs.
Lieutenant	450 (officiating)	450 + nil	= 450
Captain	500 do.	550 + nil	= 550
Captain (after 5 years)	600 (permanent)	600 + 120 (possibly)	= 720
Captain (after 7 years)	650 do.	650 + 120 do.	= 770
Captain (after 10 years)	700 do.	700 + 120 do.	= 820
Major	800 ...	750 + 180 do.	= 930
Major (after 3 years)	900 ..	825 + 180	= 1,005
Lt.-Colonel	1,250 ...	1,100 + 240	= 1,340
Lt.-Colonel (after 25 years)	1,300 ...	.....	.....
Lt.-Colonel (selected list)	1,400 ...	1,250 + 240	= 1,490

In first and second class station hospitals, i.e., in 77 hospitals, there is a *second in command allowance* of Rs. 120 or Rs. 90, which we may therefore add to the pay of, say, some Majors making (after 15 years' service) their pay Rs. 825 + 120 or Rs. 825 + 90, i.e., Rs. 945 and Rs. 915, respectively, instead of the Rs. 900 rate given under the regimental system.

Till details of the strength of the staff of medical officers are given, it is not possible to know to what extent the Service, as a whole, is benefited; in any case men when not in charge or second in command will get usually the same pay as under the regimental system, and with luck will get more. Senior men, we presume, will usually draw charge allowances of first and second class hospitals, Majors and often Captains will command the third class hospitals. Lieutenants and junior Captains will usually be left pretty much as they were before. So-called "specialist pay" will continue as before.

The above rates can scarcely be called satisfactory at the present time, they are certainly not of such a nature as to attract recruits in the present state of the depleted medical profession at Home.

THE PASSING OF THE "BARRACK-ROOM WITH A CHARPOY."

It will be remembered that a distinguished officer once, and not long ago, described the hospital arrangements for Indian troops as a "barrack-room with a charpoy," and those who know the miserable regimental hospitals of the past thirty years must admit that that contemptuous description was not undeserved.

We are now, we are told by politicians and journalists, on the verge of a new era, and if we are not, we should be so. We may hope for a very different and very much improved scale of equipment for the station hospitals for Indian troops—when that long-delayed reform, appointing I. M. S. officers to station hospitals, is introduced.

Meantime something is to be done, as the following Army Instruction (No. 1279, of 5th November, 1918) will show:—

SCALES OF ACCOMMODATION FOR INDIAN STATION HOSPITALS.

It has been decided that under the Indian Station Hospital scheme the following scales shall govern the construction of new Indian station hospitals, and shall constitute a basis for the extension and adaptation of existing hospitals, to bring them, as far as possible, up to the standard of modern requirements. The erection of new hospitals, and the remodelling of existing hospitals, will be carried out in order of urgency and as funds become available. The scales are applicable to all hospitals of 10 beds and over.

(I) The number of beds will be divided as follows:—

	Per cent.
(a) Indian officers' wards	3
(b) Infectious wards	10
(c) Main wards	87

(II) The number of beds per ward in each of the above will be determined as follows:—

- (a) Up to 3 beds—in single wards.
4 beds and over—2 single wards and remainder in one or more wards.
- (b) Of the total number of beds allotted for infectious cases 10 per cent. are to be in single-bedded wards with a minimum of 2 single-bedded wards; in other wards a maximum of 6 beds in each ward.
- (c) Single wards.—Each ward of 14 beds and under will be provided with one separate single-bedded ward.
Two-bedded wards.—Each ward of 14 beds and over, *i.e.*, up to 28 beds in main ward, will be provided with one separate two-bedded ward.
Other wards.—Maximum of 28 beds in each.

(III) Sizes of wards:—

Single wards.—Floor area 164 } at one or both
sq. ft. per bed. } ends of the
Two-bedded wards.—Floor area } larger wards.
125 sq. ft. per bed. }

Other wards, width 24'.—Wall space per bed $8\frac{1}{2}'$ but increased to 10' where door intervenes between beds. A space of 5 feet must be given between the cross or end wall and the last bed of each row. A window or door to be given on either side of each bed.

(IV) Detail of wards:—

Verandahs 10' in the clear on all sides.
Doors 4 feet 6 inches opening in the clear.
Height of wards.—With flat roof verandahs 15'.
With pent roof verandahs 16'.

(V) Additional rooms for all main wards of 14 beds and over, *vide* item (I) (c):—

- (a) Convalescent day room.—252 sq. ft. fixed scale.
(b) Milk room or milk safe.—On both floors in two-storeyed ward blocks, one in each ward, to be arranged in conjunction with ward offices. An impermeable floor to be provided. The room to be flyproof.

- (c) Clean linen room.—128 sq. ft. fixed scale.
(d) Duty room.—128 sq. ft. fixed scale. A built-in wall cupboard to be provided for medicines.
(e) Lavatory for duty room.—32 sq. ft. fixed scale. For nurse where employed. One lavatory should serve 2 ward blocks on each floor.
(f) Ward scullery.—80 sq. ft. fixed scale. For preparation of special diets, cleaning, etc. A sink to be provided.

(VI) Additional rooms for all main wards of 3 to 12 beds:—

- (a) Duty and dressing room.—168 sq. ft. fixed scale. A built-in cupboard to be provided for medicines.
(b) Lavatory for duty and dressing room.—32 sq. ft. fixed scale. *Vide* item (V) (e).
(c) Ward scullery.—80 sq. ft. fixed scale. *Vide* item (V) (f).
(d) Milk room or milk safe is to be given for every ward block, and on both floors in two-storeyed buildings. *Vide* item (V) (b).

- (VII) (a) Bathrooms, } Provided in an annexe
number.—20 per cent. of } and connected with the
beds served, 10 per cent. } ward block by a covered
when water is laid on. Each } way and placed at one
30 sq. ft. minimum. } corner of the main ward.
(b) Soiled linen room.— } A space to be provided in
3 sq. ft. per bed, minimum } conjunction with bath-
32 sq. ft. } rooms for a portable bath.

(VIII) (a) Latrines 15 per cent. of the beds served.—
Each 18 sq. ft. 10 per cent. where water carriage system exists.

(b) A urinary of 2 compartments on each floor in larger blocks and 1 compartment in smaller blocks.

(c) Bed-pan room.—Where water carriage system exists, a special sink for cleaning bed-pans should be provided. A bed-pan cupboard should be constructed in the walls on the angle with through ventilation; to be flyproofed. } Provided in an annexe as above.

(d) Sweepers' room.—55 sq. ft. fixed scale, for sweepers on duty.

(e) Passage 4 behind.—Latrines, fixed scale, for sweepers' use.

(IX) Dining-room and kitchen block, with verandah 7' clear on one side only.—Three buildings for each 1st, 2nd, 3rd and 4th class hospital, one each for Hindus and Mohammedans and one for others. Two buildings for 5th class hospitals (for Hindus and Mohammedans, respectively). Each building to contain—

(a) Dining-room.—10 sq. ft. per bed for one-third number of beds in main wards. Minimum 80 sq. ft.

(b) Washing room.— $2\frac{1}{2}$ sq. ft. per bed. Minimum 32 sq. ft. To be provided with sinks as well as taps for washing eating utensils.

(c) Kitchen (10' × 15') for 20 to 50 }
bedded hospital. } Each kitchen
(15' × 20') for 51 to 100 } will be supplied
bedded hospital. } with a cooker
(20' × 20') for 101 to 150 } capable of cook-
bedded hospital. } ing for 25 to 100
(25' × 20') for 151 and } men.
over. }

(d) Scullery.—13 sq. ft. per bed for one-third of the number of beds in hospital. Minimum 64 sq. ft.

- (e) Store room.—20 sq. ft. fixed scale } in verandah.
 (f) Fuel store.—28 sq. ft. fixed scale }
 (g) Cook's room.—35 sq. ft. fixed scale.

(X) Administrative block, with verandah 8' clear all round.

(a) Offices:—

Senior medical officer.—256 sq. ft. fixed scale. All hospitals.

Senior Sub-Assistant Surgeon.—256 sq. ft. fixed scale. All hospitals.

Clerks.—320 sq. ft. fixed scale for 101 beds and over.
 256 " " " scale. All hospitals of 26 to 100 beds.

Matron.—200 sq. ft. fixed scale. All hospitals of 151 beds and over, where nursing sisters are employed.

Records.—150 sq. ft. All hospitals of 51 beds and over. Fixed scale.

Laboratory.—256 sq. ft. fixed scale. All hospitals of 26 beds and over.

Medical Officer's duty and Board room.—256 sq. ft. fixed scale. All hospitals of 101 beds and over.

Medical Officer's bedroom.—200 sq. ft. fixed scale. All hospitals of 101 beds and over.

Bathroom or lavatory for Medical Officer.—64 sq. ft. fixed scale. All hospitals.

Sub-Assistant Surgeon's Day room.—256 sq. ft. fixed scale. All hospitals of 101 beds and over.

Bedroom.—144 sq. ft. fixed scale. All hospitals of 51 to 100 beds.

Bedroom.—200 sq. ft. fixed scale. All hospitals of 101 beds and over.

Bathroom or lavatory.—64 sq. ft. fixed scale. All hospitals of 51 beds and over.

Bathroom or lavatory for staff.—64 sq. ft. fixed scale. All hospitals.

(b) Out-patients, which may be in a separate building:—

Ophthalmic room.—152 sq. ft. fixed scale. All hospitals of 101 beds and over.

Examination room.—256 sq. ft. fixed scale. All hospitals of 26 beds and over.

Waiting room.—2 sq. ft. per bed with 144 sq. ft. minimum and 384 sq. ft. maximum floor space. All hospitals.

Minor surgery and dressing room.—1½ sq. ft. per bed, with 144 sq. ft. minimum and 384 sq. ft. maximum floor space. All hospitals.

(XI) Stores, with 8' verandah on one side only.

Store-keeper and Assistant's office.—256 sq. ft. fixed scale. All hospitals of 151 beds and over.

Store-keeper's office.—120 sq. ft. fixed scale. All hospitals of 51 to 151 beds.

Bedding store for surplus mattresses.—2 sq. ft. per bed. For hospitals of 151 beds and over.

Dressing store for storage of wools, lints, etc.—1½ sq. ft. per bed. For hospitals of 151 beds and over.

Ration store for meat and other fresh foodstuffs.—1¼ sq. ft. per bed. For hospitals of 151 beds and over.

Extra store for any reserve stores of clothing in bales.—1¼ sq. ft. per bed. For hospitals of 101 beds and over.

Field Service Equipment for medical and other mobilization equipment held on charge.—1 sq. ft. per bed. For hospitals of 101 beds and over.

Medical store for reserve supply of drugs, medical stores, etc.—¾ sq. ft. per bed. Minimum 80 sq. ft. For hospitals of 51 beds and over.

Dispensary 1½ sq. ft. per bed.
 Minimum 144 sq. ft.

Steward's store for hospital food supplies.—2 sq. ft. per bed. For hospitals of 151 beds and over, and 3 sq. ft. for all hospitals up to 150 beds. Minimum 80 sq. ft.

Pack store for patients' kit.—1¼ sq. ft. per bed. Minimum 80 sq. ft.

Clean linen store for patients' linen, also bed linen, etc.—2 sq. ft. per bed for hospitals of 151 beds and over and 3 sq. ft. for all hospitals up to 150 beds. Minimum 80 sq. ft.

Soiled linen store for soiled linen awaiting disinfection, washing, etc.—1¼ sq. ft. per bed. Minimum 60 sq. ft.

Oil and lamp store for cleaning lamps, etc., when necessary.—¾ sq. ft. per bed. Minimum 80 sq. ft.

For all hospitals.

(XII) Laundry block.—Steaming room.—¾ sq. ft. per bed.

Soiled clothes room.—¾ sq. ft. per bed.

Ironing room.—2 sq. ft. per bed.

Drying room.—1½ sq. ft. per bed, in verandah outside drying room.

Ironing and drying room.—3 sq. ft. per bed. Minimum 144 sq. ft.

Dhobie ghat.—One stone for 25 beds or less.

For all hospitals of 101 beds and over.

For all hospitals of less than 101 beds.

For all hospitals.

(XIII) Mortuary.—150 sq. ft. fixed scale.

Post-mortem room, with verandah 8' on one side.—247 sq. ft. fixed scale.

For all hospitals.

For all hospitals of 151 beds and over.

(XIV) Infectious blocks.—One or two storeyed for all hospitals. Verandahs on all sides 10 ft. in clear.

Main wards. } See items (I) to (IV) and (VI).
 Single wards. }

Ward orderly or nurse's room.—108 sq. ft. fixed scale.

Nurse's bathroom.—48 sq. ft. fixed scale.

Or ward orderly bathroom in conjunction with bathrooms in annexe.—30 sq. ft. fixed scale.

Scullery.—(6'×12') 72 sq. ft. fixed scale.

Bathroom, one } in annexe, see item (VII).
 Soiled linen room, one } For each main ward.

Latrine.—2 seats in annexe, see item (VIII) (a). For each main ward.

Kitchen with verandah 5'.—Two, 80 sq. ft. each fixed scale.

Scullery.—64 sq. ft. fixed scale.

Store room.—20 sq. ft. fixed scale.

Fuel store.—20 sq. ft. fixed scale.

(XV) Indian officers' block.

- Main Wards. } See items (I) to (IV) with addition of day room 200 sq. ft. for all wards of four beds and over.
- Single wards. } Attendants' room 80 sq. ft. for each ward.
- Bathrooms. } In annexe, see item (VII). In an officers' block, of 1 or 2 beds 1 bathroom is to be provided. Up to 10 beds 2 bathrooms, above 10 beds 20 per cent. of beds served.
- Soiled linen room. } In annexe, see item (VIII).
- Latrine. } Number of latrines to correspond to number of bathrooms.
- Bed-pan room. }
- Sweepers' room. }
- Dining rooms and kitchens with verandah 5' one side.—Two blocks, one each for Hindus and Mahomedans, each connected with main wards by covered ways 7' wide and 27' long and containing—
- Dining room 72 sq. ft. fixed scale with verandah 7' wide.
- Washing room 40 sq. ft. fixed scale.
- Kitchen 80 sq. ft. fixed scale.
- Fuel store 21 sq. ft. fixed scale, in verandah.
- Scullery 64 sq. ft. fixed scale.
- Store room 20 sq. ft. fixed scale.

(XVI) Disinfecting block.—Only to be provided in stations where specially authorised, and is intended for use by the whole station.

- Receiving room.—(20' × 20') 400 sq. ft. fixed scale. } With disinfector
- Issuing room.—(20' × 20') 400 sq. ft. fixed scale. } placed between.
- Fuel store.—20 sq. ft. fixed scale.
- Vansheds.—Two (24' × 14').—Required to shelter motor lorries. One for soiled and one for clean clothing where considerable distribution over the station is necessary. These sheds require special sanction.

(XVII) Operating theatre.—On the scale laid down in Army Instruction (India) No. 314 of 1918.

- Theatre.—(24½' × 17') 406 sq. ft. fixed scale, with north light and window space 140 sq. ft. over. } For all hospitals of 51 beds and over.
- Sterilization room.—(16' × 11½') 184 sq. ft. fixed scale.
- Dressing room.—(16' × 11½') 184 sq. ft. fixed scale. } Essential to all operating rooms and to be contiguous to them.
- Anæsthetic room.—(18½' × 11½') 212 sq. ft. fixed scale. } For all hospitals of 51 beds and over.
- Preparation room.—(13½' × 11½') 156 sq. ft. fixed scale. } With a verandah 8' in the clear on three sides.
- X-ray room.—(22' × 14½') 320 sq. ft. fixed scale.
- Developing room.—(14' × 10¾') 150 sq. ft. fixed scale. } Where specially authorised.
- Store room.—(14' × 10¾') 150 sq. ft. fixed scale. } With a verandah 8' in the clear on three sides.
- Engine and battery room.—(25' × 16') 400 sq. ft. fixed scale. May be placed anywhere within convenient wiring distance, but should not be attached to the operating theatre building. Battery must be partitioned off from engine room as cleanliness is essential.

(XVIII) British detachment block.—This is a necessary addition to Indian station hospitals in all stations where no British station hospital exists and where British troops are located.

Officers and rank and file.—Number of beds 6 per cent. of the strength in the station.

Main wards.—4 beds and over on a similar scale as in Indian station hospitals.

Single wards.—165 sq. ft. one at each end of the main ward.

Annexes.—Two. As in Indian station hospitals.

Bathrooms, see item (VII), minimum 2—one for officers, one for rank and file.

Latrine, see item (VIII), minimum 2—one for officers, one for rank and file.

Night-soil receptacle room.

Sweepers' room. } As in Indian station hospitals.

Soiled linen room.

Kitchen.—80 sq. ft. fixed scale with 7' verandah. } Connected with main block by covered way 7' wide and 27' long.

Scullery.—64 sq. ft. fixed scale with 7' verandah. }

Fuel store.—21 sq. ft. fixed scale, in verandah.

(XIX) Main outdoor Latrine.—Latrines 4 per cent. of total beds in main wards.

Urinary.—Compartments 2 per cent. of total beds in main wards.

INDIAN STATION HOSPITALS.

At long last the long talked of scheme for the introduction of the Station Hospital system is sanctioned, and details are given in Army Instruction (India) No. 1343 of 1918, dated Simla, 19th November, 1918.

The new classification of military hospitals shows that there will be 64 *first class* hospitals, 13 *second class*, 18 *third class*, 19 *fourth class*, and 33 of the *fifth class*.

The regulations now published are as follows:—

INTRODUCTION OF STATION HOSPITALS FOR INDIAN TROOPS AND FOLLOWERS.

It has been decided that, with effect from the 1st December, 1918, station hospitals for Indian troops and followers will be established in place of existing regimental and followers' hospitals.

2. Station hospitals for British troops will thereafter be known as "British station hospitals" and those for Indian troops and followers as "Indian station hospitals."

3. The system of command and administration in Indian station hospitals will be similar to that in hospitals for British troops.

4. All existing hospital arrangements for Indian troops and for regimental and departmental followers will be brought under one administrative control which will be exercised by the officer commanding the Indian station hospital. Officers of the Indian Medical Service, sub-assistant surgeons and subordinate hospital establishments will no longer be attached to Indian regimental units, but will form a part of the establishment of Indian station hospitals.

5. Hospitals will be classified according to the total strength of Indian troops and followers forming the garrison as follows:—

First class Indian station hospital, where the strength of garrison (as above) is 3,000 and over.

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Second class Indian station hospital, where the strength of garrison (as above) is 2,000 and over.

Third class Indian station hospital, where the strength of garrison (as above) is 1,000 and over.

Fourth class Indian station hospital, where the strength of garrison (as above) is 500 and over.

Fifth class Indian station hospital, where the strength of garrison (as above) is under 500.

The present classification of Indian station hospitals, which is only temporary, is shown in appendix "A" to this instruction. The permanent classification of hospitals will be carried out on the restoration of normal conditions.

6. Where more than one regimental, or combined, hospital already exists in a station, the local authorities will decide, and report to the Director of Medical Services in India for the information of the Government of India, which will be the Indian station hospital. The remaining outlying hospitals, which it is necessary to retain, will be designated and administered as section hospitals of the station hospital. The officer commanding station hospital will be in command of, and administer, all such section hospitals. Section hospitals will be supplied with equipment, medical stores and stationery from the station hospital.

7. For the period of the war, and until further instructions are issued, the Director, Medical Services in India, will appoint officers to command all first class Indian station hospitals and the hospitals at the following stations:—

Bakloh.	Shillong.
Dharmasala.	Maymyo.
Almora.	Mandalay.

Commanding officers of other hospitals will be appointed by the General Officer Commanding, Command or Independent Division, who will also appoint officers as second in command of all first and second class station hospitals.

8. The rules governing the pay and allowances of officers of the Indian Medical Service are laid down in appendix "B" to this instruction.

9. Deputy and Assistant Directors, Medical Services, Divisions and Independent Brigades, will appoint sub-assistant surgeons to the sub-charge of all Indian station hospitals.

Revised rates of sub-charge allowances for sub-assistant surgeons will be announced hereafter.

10. Ward orderlies will be attached to regimental units for purposes of pay, clothing and rations, as at present. Details as regards the appointment, pay and promotion of ward orderlies are given in appendix "C" to this instruction.

11. Orders will be issued shortly regarding the formation of a new corps to be designated the Indian Hospital Corps. This corps will combine, in one organization, the Army Bearer Corps, the Army Hospital Corps and the subordinate personnel of Indian station hospitals.

12. Temporary hospital writers and store-keepers will be engaged on the scales laid down in appendix "D" in which the rates of pay of store-keepers are given. These scales are in supersession of those laid down in Army Instruction (India) No. 1231 of 1918. Writers should be paid at the lowest rates on which they can be obtained. Both classes must sign the agreement on I. A. F. Z. 2255, the words "on field service or" in line 12 of the agreement, and "either" and "or out of" in line 13, being deleted in ink and initialled by the officer commanding hospital.

13. All existing regimental hospital followers and menial personnel of followers' hospitals, will, if they are willing, be temporarily transferred, together with their documents, to the Indian station hospital at the station in which they are serving. If not willing to be

thus transferred, they will be discharged unless they are pensionable servants, when each individual case will be reported to the Director, Medical Services in India, for orders. The scale on which followers will be employed is laid down in appendix "E." If in order to complete this scale it should be necessary to recruit personnel in addition to those transferred from regimental establishments, these should be engaged temporarily at the lowest rates of pay on which they can be obtained. The scale of clothing for all hospital followers (including those now serving) is given in appendix "E."

14. The instructions contained in Army Regulations, India, Volume VI, and Standing Orders for the Military Medical Services, regarding the duties of officers of the Royal Army Medical Corps and assistant surgeons will be generally applicable to officers of the Indian Medical Service and sub-assistant surgeons.

Particular attention must be paid to the detailing of officers and sub-assistant surgeons for medical and sanitary duties, outside hospitals, in connection with the various units in each station, and for orderly duty.

15. Postage labels will be supplied to officers commanding Indian station hospitals by the Divisional or Brigade Deputy or Assistant Director, Medical Services, in the manner at present in force in the case of British station hospitals. Any funds required will be arranged for by the General Officer Commanding concerned, in consultation with the Controller of Military Accounts.

16. Officers commanding Indian station hospitals will exercise the same financial powers as Senior Medical Officers, Indian Medical Service [Army Regulations, India, Volume III, paragraph 6 (vii)].

17. The allotments at present made by the Deputy and Assistant Directors, Medical Services, to Senior Medical Officers, Indian Medical Service, to meet contingencies, and for the purchase of articles of local supply, will, in future, be made to officers commanding Indian station hospitals.

18. The pay of officers of the Indian Medical Service, sub-assistant surgeons and hospital establishments will be drawn in accordance with the rules laid down in "Instructions, Staff" for drawing the pay of officers of the Royal Army Medical Corps, assistant surgeons and men of the Army Hospital Corps.

19. Pending the provision of pack stores in Indian station hospitals, Indian soldiers and followers, when admitted to hospital, will have with them only their chevrons, boots, *lotahs*, and the necessary cleaning materials. All other articles of clothing and equipment will, on the day on which a man is admitted to hospital, be removed and retained under regimental arrangements.

The officer commanding Indian station hospital will furnish the officer commanding unit with the names of all men who are to be discharged from hospital one day prior to their discharge. The officer commanding unit will return the men's clothing to hospital on the morning of the day of discharge.

20. Pending further orders the most suitable arrangements must be made for carrying on the station hospital system in existing permanent or temporary hospital buildings expanded by the provision of such temporary buildings as may be sanctioned on representations made to the Director, Medical Services in India.

21. Indian station hospitals will be dieted institutions, the scales of diet being as authorised in Army Instruction (India) No. 1277 of 1918. The necessary additional furniture and equipment have been sanctioned on a provisional basis in Army Instruction (India) No. 1231 of 1918. Pending the issue of revised scales of medical and surgical equipment, the equipment at present allowed will be continued in use.

22. The necessary amendments to regulations will be issued in due course.

PROVISION OF ADDITIONAL EQUIPMENT FOR FIRST AND SECOND CLASS BRITISH STATION HOSPITALS.

It has been decided that in order to effect general improvement in the standard of comfort and efficiency in the first and second class British station hospitals located at the stations enumerated in appendix VI (1), Army Regulations, India, Volume VI, equipment for these hospitals shall be provided on the revised scales. Steps should be taken immediately to complete the equipment of the wards in accordance with these scales subject to the condition that, before new patterns are introduced, existing patterns must first be fully utilised.

2. The expenditure involved is estimated at Rs. 2,38,833 initial and Rs. 23,883 annual recurring, and should be treated as pertaining to the schedule measure "Provision of additional equipment for first and second class British station hospitals" and met from the provision of Rs. 10 lakhs in this year's Military Works estimates for special (B. I. No. S.-15) demands.

3. Sanction is hereby accorded to the transfer from the head "47—Military Works—Special," of a sum of Rs. 1,08,997 to the head "46—Army," under the grants and heads shown in appendix B to this instruction, to meet the Army initial expenditure during the current financial year.

		Initial. Rs.	Recurring. Rs.
Army	...	1,08,997	10,900
Military Works	...	1,29,836	12,983
Total	...	2,38,833	23,883

CHILD-BIRTH CONDITIONS IN INDIA.

THE report of what is called the "Victoria Memorial Scholarships Fund" has just been issued in a volume of 162 pages, and contains much of interest. The unhappy conditions of child-birth among Indian women have been a concern to many since Lady Dufferin first began her endeavour to provide lady doctors for India. Puerperal sepsis and osteomalacia are very prevalent and deadly, and the ignorance as to artificial methods of infant feeding leads to the extremely high infantile mortality in India.

Recognition of these facts in 1903 led to the formation by Lady Curzon of the Victoria Memorial Scholarships Fund. The money collected was to be applied to the proper training of the "hereditary" (?) *dai* class of women. A sum of near seven lakhs was collected, giving an annual income of Rs. 34,000, which was distributed among the different provinces.

The new movement was not successful and the instruction attempted was mainly theoretical. Many of the midwives were old women, "some were deaf and some were blind," and they were deeply of opinion that there was little for them to learn! We may here quote from the report itself:—

Improvement of the conditions of child-birth in India is a problem at least as difficult and at least as important as the prevention of plague; and it is only by patient work frequently unsuccessful and experiments constantly repeated that a successful issue can be expected. In time to come the thanks of India will no doubt be given to those who have shown by practical experiment that supervision of hereditary *daïs* is not

only desirable, but possible. In this connection the Committee would particularly mention the names of the late Miss Hewlett, of Amritsar; Dr. Agnes Henderson, of Nagpur; Dr. Gertrude Stuart, of Quetta; and Dr. Maud Allen, of Ferozepore, as deserving the gratitude of the women of India.

As regards the class of women to be trained, the Committee feels the warmest interest in all efforts to train and assist midwives of a superior class, but it feels that, until proof is given that the majority of women in a province, rich and poor alike, are employing these midwives for natural labour, the funds of the Victoria Memorial Scholarships must be expended entirely for the improvement of the hereditary *dai* class.

The Committee hopes that the opinions given will be carefully considered alike by Local Governments, sanitary experts, medical women, and midwives.

It is felt that more might be done both by the Imperial and Local Governments to relieve the terrible conditions, the suffering, and loss of life endured by so large a section of the population.

Statistics show that in recent years the birth-rate in India has been falling, with a tendency for the death-rate to rise. If the wastage of infant life is to be taken in hand the first step is undoubtedly improvement of the conditions of child-birth. Measures to provide milk depôts, crèches, and baby clinics are of little use to children who die before or during birth, or within the first month after.

One very evident fact is the lack of statistics relating to child-birth. It ought not to be more difficult to discover the number of deaths following child-birth than the number following plague, and the discovery that certain cities were peculiarly affected in this way could be used as a strong incentive to their municipalities, and to their principal residents, to effect improvements.

The Committee hopes that medical women will do what they can to carry out some of the suggestions made for improvement. Some will no doubt prove difficult or impracticable, others may be unexpectedly easy; but the Committee hopes that medical women will send information as to success or non-success, and from time to time further ideas and suggestions which may be of service.

A point regarding which there is much difference of opinion is whether work among the hereditary *dai* class should be continued, or whether it should be given up and all effort concentrated on providing a better class of midwife. There is a general agreement that this last would be the simplest and easiest solution of a difficult problem; but while the Surgeon-General and other officers of the Indian Medical Service in Bengal and the Inspector-General, United Provinces, give a definite pronouncement that this course should be followed, the majority of the medical women who discuss the question declare it impossible as a practical measure. It is true that, as pointed out time and again in the annual reports, the hereditary class is unwilling to be taught, makes unsatisfactory pupils and often after training is no better than before; while women of other classes are obedient and amenable, may have some education, and absorb new ideas readily. On the other hand, it is stated that it is impossible at present to get a sufficient number of educated Indian women to replace indigenous *daïs*. It may be possible in the capital cities, but it is not possible throughout the districts of India, where the population is scattered over wide areas and where women are being sought for in vain to take up posts as compounders, nurses, teachers, etc. Next it is argued that a woman of higher class expects a fee much larger than the

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middle and low class Indian family is as a rule prepared to give. She is also unwilling to do all the work in the house the hereditary *dai* is expected to do, and this forms a very practical obstacle to her employment in poor families. In many cases trained midwives have been retained by municipalities and it has been found that they attended few cases of natural labour even after years of work; and this even though the people were quite ready to look upon them as doctors and call them in for abnormal cases.

Some claim that the hereditary *dai*, when young, is found to be adaptable, intelligent, and willing, with a certain hereditary instinct for her work which, other things being equal, makes her a better pupil than the women of other castes.

The opinion of most of the medical women, therefore, is that for general improvement of child-birth in India work amongst hereditary *daïs* must be continued, but that it is useless unless it is combined with some scheme of supervision of their work by means of midwife supervisors.

Objects of the Fund.

The objects of the Fund have now been defined to be—

(1) To train midwives in the female wards of hospitals and female training schools in such a manner as will enable them to carry on their hereditary calling in harmony with the religious feelings of the people, and gradually to improve their traditional methods in the light of modern sanitation and medical knowledge.

(2) Scholarships to midwives will vary according to circumstances and locality.

(3) When desirable, qualified female teachers, who understand the vernacular, will be sent to outlying districts, and fees will be paid to midwives who attend a course of elementary instruction.

(4) Funds for the above purpose will be granted, as far as possible, according to the interest received on the sums raised in each locality.

WOMEN'S MEDICAL SERVICE FOR INDIA.

THE following rules for the Junior Branch of the Women's Medical Service for India have recently been published by the Central Committee of the Countess of Dufferin's Fund.

1. This service shall be called "The Junior Branch of the Women's Medical Service for India." It shall be included in the National Association for supplying female medical aid to the women of India, hereinafter called the Countess of Dufferin's Fund, and shall, subject to the provisions of the following rules, be under the direction and control of the Central Committee of that Association, hereinafter called the Central Committee.

2. Recruitment for the service shall be made by a sub-committee of the Central Committee which shall include the Director-General, Indian Medical Service, the Honorary and Joint Secretaries to the Central Committee.

This sub-committee shall perform the duties of a medical board, examine candidates for physical fitness, and give permission to return to duty after periods of invaliding: provided that the sub-committee may, by general or by special order, delegate their powers to temporary boards of local medical officers, medical women being included in cases of recruitment, invaliding and return to duty after sick leave.

3. Each candidate selected for the service must fulfil the following requirements:

- (a) She must be a British subject resident in India.
- (b) She must possess a medical qualification registrable in the United Kingdom and in India.
- (c) She must be between the ages of 24 and 30 years.
- (d) She must be unmarried or a widow.
- (e) She must produce a certificate of health and moral character.

Provided that the Central Committee shall, at any time, have power to promote to the service ladies not fulfilling the above conditions but who have shown marked capacity.

4. Members of the Service shall be appointed by the Central Committee to serve in the several provinces.

5. Members of the Service on appointment shall engage for general service anywhere in India and Burma, and shall serve a probationary period of one year.

At the end of such period of probation their appointment shall be confirmed or terminated, as the case may be, by order of the Central Committee on the report of the Provincial Committee of the Countess of Dufferin's Fund, hereinafter called the Provincial Committee, after consultation with the authority or authorities financially concerned. (*Vide* rule 7, *infra*.)

After confirmation, service shall, at any time, be terminable on three months' notice on either side, and the Central Committee shall have power to dispense with the services of any member of the Service on the payment of three months' salary in lieu of notice.

6. Members of the Service shall receive their pay and allowances from the Central or Provincial Committees of the Countess of Dufferin's Fund. Each Hospital Committee employing a member of the Service shall pay a contribution to the Central Committee for salary, provident fund, etc., to be decided on by the Provincial Committee in consultation with the authority financially concerned.

7. Members of the Service shall be graded and paid as follows:—

Grade.	Length of service.	Salary.
4th grade ...	1—5 years ...	Rs. 130 per mensem.
3rd " ...	6—10 " ...	" 165 "
2nd " ...	11—15 " ...	" 200 "
1st " ...	16 " ...	" 250 "

There are in addition several senior posts drawing pay at the rate of Rs. 300 per mensem, to which members of the Service will be appointed by selection.

8. Members of the Service shall be required to attend post-graduate courses at the end of the 5th and 10th years of service, and shall be promoted to the 3rd and 2nd grades on the receipt by the Central Committee of a satisfactory report of their progress from the board of post-graduate lecturers. Promotion to the first grade shall take place automatically on the receipt of a favourable report from the Provincial Committee under whom she is serving at the end of fifteen years' service; promotion to the senior grade shall be made by the Central Committee from among the members of the 1st grade and by selection only.

Where a medical woman who has previously served is admitted into the junior branch, Women's Medical Service, the Central Committee may, if they consider it necessary, grade her for purposes of pay and promotion as if the whole or any part of her previous medical work had been carried out in the junior branch, Women's Medical Service.

9. Furnished quarters shall be provided or a house-rent allowance in lieu thereof, the amount to be decided on between the Provincial Committee and the authority financially concerned.

Members of the Service shall be entitled to travelling allowance on the scale and subject to the conditions set out in Appendix I.

10. Members of the Service shall be entitled to leave according to the regulations set out in Appendix II to these rules.

11. Members of the Service shall join a Provident Fund on the terms and subject to the conditions set out in Appendix III to these rules.

12. Members of the Service shall be permitted to engage in private practice, provided that such private practice does not interfere with the performance of their official duties.

The Provincial Committee shall have power to decide in any case, after consultation with the authority or authorities financially concerned (*vide* rule 7, *supra*), whether private practice does in fact interfere with the performance of official duties.

13. Members of the Service shall retire on attaining the age of 55 years, unless the Central Committee, on the recommendation of the Provincial Committee, after consultation with the authority or authorities financially concerned (*vide* rule 7, *supra*), desire to retain their services for a further period to be determined by them.

14. When appointed to a province, members of the Service shall forthwith become subordinate to the Provincial Committee in all matters, and they shall not correspond with the Central Committee except through the Provincial Committee.

15. The Provincial Committee shall have powers of disciplinary control over members of the Service, including suspension, but powers of removal or dismissal for inefficiency, misconduct or other valid cause, shall be vested in the Central Committee only.

16. When a member of the Service is attached to a hospital or other institution whose medical Superintendent is a member of the Senior Women's Medical Service, she shall be subordinate to that Superintendent, and her correspondence with the Provincial Committee shall pass through the Superintendent.

When a member of the Service is attached to a District or Municipal Hospital, she shall be subordinate to the Civil Surgeon of the district, and her correspondence with the Provincial Committee shall pass through his hands.

17. The Central Committee shall have power, in communication with the Provincial Committee, to depute any qualified person or persons to inspect members of the Service and the hospitals or other institutions under their charge.

18. The decision of the Central Committee shall be final in all cases.

19. The Central Committee reserve power to alter these rules from time to time after consultation, where necessary, with Local Governments and Provincial Committees.

AIR DISEASES.

ARMY Council Instruction No. 586 of 1918, dated War Office, 25th May, 1918, runs as follows:—

NOMENCLATURE OF MORBID CONDITIONS DUE TO FLYING.

1. Cases of sickness attributable to flying will be recorded on the Field Medical card, Admission and Discharge Books and all medical records under the heading "Flying Sickness" which will be regarded as a short synonym for morbid conditions due to flying, with the nature of the sickness added in accordance with the following nomenclature:—

Flying Sickness.

- A. Sickness at High Altitudes.
- B. Fainting in the Air.
- C. Cardio Vascular Debility.
- D. Exhaustion.

E. Vomiting.

F. Vertigo.

Thus, an airman admitted for vertigo will have his disease recorded as "Flying sickness (F)" or "Flying sickness, Vertigo"; similarly an admission for fainting in the air will be "Flying sickness (B)" or "Flying sickness, Fainting in the Air"; an admission for sickness at high altitudes "Flying sickness (A)" or "Flying sickness, Sickness at High Altitudes"; and so on.

This nomenclature will come into force forthwith.

THE following Army Department notification, which was published in the *Gazette of India*, dated the 18th October, 1918, is reproduced for information:—

The Governor-General in Council is pleased to notify that the Right Hon'ble the Secretary of State for India has decided that, with effect from the 2nd October, 1918, the Indian Subordinate Medical Department shall be designated the Indian Medical Department.

PROVISION OF BAMBER OIL AS A PROTECTION AGAINST MOSQUITO BITES.

Sanction is accorded to the issue, at the discretion of Divisional and Brigade Commanders for the use of men on guard, of bamber oil, consisting of oil of citronella, cocoanut oil, kerosene oil, and carbolic acid, as a culecide and sandfly deterrent, instead of the drugs mentioned in India Army Order No. 1191 of 1917.

2. Bamber oil will be prepared in hospitals and will be issued "as required."

3. The expenditure involved, which is estimated at Rs. 9,877-10-3 annual recurring, is debitable to the ordinary grant and head of account affected in the Army Estimates.

GRANT OF FREE MEDICAL ATTENDANCE TO THE WIDOWS AND CHILDREN OF OFFICERS DURING THEIR ENFORCED DETENTION IN INDIA.

With the approval of the Right Hon'ble the Secretary of State for India, it has been decided that the widows and children of officers (including officers with honorary rank and chaplains), referred to in India Army Orders 1036 of 1917 and 7 of 1918, and Army Instruction (India) No. 778 of 1918, shall, during their enforced detention in India owing to present restrictions on sea travelling, be granted free medical attendance to the extent to which they were entitled to such attendance when the heads of families were alive, under Army Regulations, India, Volume VI, paragraphs 67 and 67-A.

2. No charges are involved on account of fees for the medical attendant. The cost of medicines, etc., will be debitable to the ordinary grant and head of account affected.

SCALES OF DIET FOR INDIAN TROOPS' AND DEPARTMENTAL FOLLOWERS' HOSPITALS.

The issue of free diets on a tentative scale is sanctioned for the sick of the various Indian Corps (all arms) and departmental and regimental followers under treatment in Indian troops' and departmental followers' hospitals.

2. All diets and extras should be accounted for by the officer commanding the hospital in India Army Form Z-2108 which should be submitted to the Divisional Controller concerned.

3. During the period of the war, hospital stoppages shall not be recovered except as laid down in India Army Order No. 836, dated the 17th September, 1918.

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4. The procedure laid down in Army Regulations, India, Volume II, paragraph 883, will be applicable to those who are entitled to free rations. Those not drawing free rations will not be entitled to free hospital diet until the day following that on which they are marked "hospital" on Army Form A.-27. The extras noted in Army Regulations, India, Volume VI, paragraph 114, are admissible on the day of admission to, or detention in, hospital.

5. The necessary amendments to Army Regulations, India, and the forms concerned will be published in due course.

6. Separate orders will be issued regarding the incidence and allocation of the expenditure involved as

well as the source from which it will be met during the current financial year.

THE SIR LEONARD ROGERS' BUST FUND.

THE following statement shows the accounts of the Fund for the setting up of a marble bust of Sir Leonard Rogers, F.R.S., F.R.C.P., C.I.E., I.M.S., in the hall of the School of Tropical Medicine in Calcutta. It is proposed to found a Silver Medal in the school with the balance in hand, *viz.*, Rs. 745.

PORTRAIT (BUST) FUND.

<i>Receipts.</i>		<i>Disbursements.</i>	
	Rs. A. P.		Rs. A. P.
To Amount received by Subscriptions	... 4,433 12 0	By Cash paid to G. K. Mhatre for bust, etc.	... 3,471 14 0
„ Interest	... 76 2 2	„ Postage	... 55 9 6
		„ Discount on Up-country Cheques	... 9 2 0
		„ Miscellaneous Expenses	... 223 1 0
		„ Balance in hand carried down	... 745 3 8
	<u>4,509 14 2</u>		<u>4,509 14 2</u>
To Balance in hand brought down	... 745 3 8		

CALCUTTA,

4th December, 1918.

THACKER, SPINK & CO.

REVIEWS.

The Medical Annual, 1918.—By various Authors. Bristol: Messrs. John Wright & Sons, Ltd. Price, 10s.

As an epitome of the recent advances in medical science the Medical Annual for 1918 fully maintains the high place in medical literature which this series of publications has long occupied.

The general arrangement of the subjects dealt with is too well known to need a description here. Suffice it to say that it comprises over 700 pages packed with medical and surgical information of all kinds.

The world war and the medical and surgical problems connected therewith has resulted in the production of an enormous amount of original work relating to the injuries and diseases peculiar to campaigning in different parts of the globe. The sifting of the mass of available material has been carried out by writers of repute in the medical world, and a careful perusal of the articles he is interested in, will well repay the reader.

Among the articles which deserve special attention are the following:—

An article by Mr. Thurston Holland on radio-activity and electro-therapeutics. This includes a discussion of the most approved methods of localising foreign bodies. Attention may also be directed to a description of Finzi's skin marking solution, a new method for X-ray delineation of the pituitary fossa, the use of X-rays in diagnosis-

ing gas gangrene, and a discussion of the value of X-rays in the diagnosis of gastric cancer.

The general treatment of wounds is discussed by Surgeon-General Wildey. He describes the conditions under which primary suture may be performed, the most important precaution being the removal of all fragments and injured tissues.

The subject of gas gangrene is dealt with by the same author. He emphasises that it is a disease of the muscle tissues and follows on the action of anærobic saprophytes of faecal origin. Treatment resolves itself into removal of the affected tissues and continuous irrigation with antiseptic solutions.

The influence of prophylactic injections of anti-toxic serum in tetanus should be noted. It has caused a reduction in the number of cases of tetanus in proportion to the number of wounded from 1.6 per cent. to 0.2 per cent.

Injuries to the jaws and face are dealt with by Mr. W. H. Dolamore. He describes various ingenious methods by which the most ghastly disfigurements are removed or mitigated. The methods described include bone grafting and the wearing of special masks and spectacles.

Gun-shot wounds of the abdomen are discussed by Dr. E. Wyllys Andrews. He points out the difficulty in determining whether the bullet has penetrated a hollow viscus or not. The importance of rest in bed and stimulants in pulseless patients before attempting operation is insisted on.

Other articles dealing with war injuries and diseases are :—

Gunshot wounds of nerves; wounds of the brain and spinal cord; and shell shock, by Dr. Ramsay Hunt.

Soldiers heart, by Dr. Carey F. Coombs.

Trench fever, by Dr. Goodall.

Trench throat, by Dr. J. S. Fraser.

Eye injuries, by Dr. Hugh Thompson.

The articles on tropical diseases by Sir Leonard Rogers will be read with interest by the medical profession not only in India but all over the world. Continued good results are recorded from the injection of tartar emetic in kala-azar, and use of emetine in amœbic dysentery.

Dr. A. Latham describes a new method of treating asthma by injection of a solution of peptone at intervals of from three to seven days. He also mentions the use of optochin (ethyl-hydrocuprein) in pneumonia, 0.25 gm. (3 to 4 grs.) may be given every four hours.

Dr. Wm. E. Fothergill reports on the scopolamine and morphia method of producing twilight sleep during labour. He states that it is generally agreed that the method is most suitable for maternity homes where patients can be attended by a medical man who devotes his whole time to it.

Dr. C. F. Marshall discusses the relative values of the lutein test and the Wassermann reaction in the diagnosis of syphilis. The lutein test is regarded as more specific unless the patient has been taking potassium iodide.

In connection with the diagnosis and treatment of cerebro-spinal fever, a special article on lumbar puncture by Dr. Ramsay Hunt should be carefully perused.

Typhoid and paratyphoid fevers are discussed by Dr. Goodall. In both these diseases intramuscular and intravenous injections of peptone have been used with benefit.

Among skin diseases, Dr. E. Graham Little describes the treatment of Impetigo contagiosa by lotio hydrarg. perchlor. (1 in 6,000) followed by white precipitate ointment.

Mental diseases are dealt with by Drs. Bedford Dierce and Kate Haslam. Among other things it is suggested that neurasthenia, asthma, and depression are due to chronic infection with the influenza bacillus in association with other organisms such as micrococcus catarrhalis and the pneumococcus, and that treatment with sensitised vaccines is curative.

In a short note of this nature it is impossible to do more than mention some of the more interesting features of a work which rightly claims to cover the whole province of medicine and surgery. From a careful perusal of its pages we can safely conclude that no medical library should be without this excellent summary of recent advances in medical and surgical science.

An Index Prognosis and End Results.—Edited by A. RENDLE SHORT, F.R.C.S. Second Edition, revised and enlarged. Bristol: John Wright & Sons, Ltd., London. Simpson Marshall, 1918.

WE are glad to see a new edition of this valuable book. We gave the first edition a very hearty welcome and extend the same to this revised and enlarged edition. The account of tropical diseases is in the safe hands of Sir Leonard Rogers. The contributors are well-known men, and each writes on his own special subject.

To set forth the results, and especially the end results, of various methods of treatment is most useful, and in this respect the book is unique. There is an unusually ample index, and the subjects are arranged alphabetically.

We have no hesitation in recommending this valuable and helpful book to our readers.

War Wounds of the Lung.—Notes on their Surgical Treatment at the Front. By PIERRE DUVAL. Authorised English translation.

THIS small volume, running to less than a hundred pages, deals with the vexed question of the treatment of war wounds of the lung. It consists of a collection of notes made by the author and his colleagues when on field service. It is pointed out that the main principle to be borne in mind is the complete and absolute resemblance between gunshot wounds of the lung and of muscle. The characteristics, *i.e.*, area of dead, traumatized tissue, zone of hæmorrhagic infiltration, etc., are the same as in other battle wounds, and, in the author's opinion, must be treated on exactly the same lines. Hæmorrhage and mechanical asphyxia are the chief causes of the appalling early mortality that makes the subject of such extreme importance. The book is well written and the illustrations are excellent.

War Neuroses—By JOHN J. MACCURDY, M.D. Cambridge: University Press, 1918.

THIS is a very interesting book, and in it an expert describes his experiences of the special forms of neurosis which are produced by the shocks and strains of warfare, the great frequency of which in the great war which has just ceased, has made what was formerly a narrow speciality familiar to all practitioners of medicine.

Dr. MacCurdy points out that whereas the neuroses of civil life hinge upon factors connected with the complicated instincts of sex, those of war are much simpler and depend essentially in the coming into play of the relatively simple instinct of self-preservation.

The book is divided into eleven chapters, and deals with typical cases which are particularly well chosen, with "anxiety states," "mental make up," fatigue, concussion, conversion, depression and hysteria, and neuroses with a useful chapter on prophylaxis.

The term "anxiety states" is used by the author to designate one of the two clinical groups, for the reason that anxiety is the most prominent and consistent feature in the clinical picture. These cases resemble what is often called "neurasthenia" in civil practice, and we recommend this chapter especially to our readers.

The cases coming under the head "concussion" are ably discussed and explained. We can strongly recommend this useful book. It will prove of much value to medical officers in charge of war hospitals in India.

ANNUAL REPORTS.

CALCUTTA HEALTH REPORT, 1917.

THIS is a big report, and we have no space to refer to very many interesting items in it. We make, however, a few selections of special interest.

The death rate in 1917 was 23 per mille, the lowest on record, but calculated on an hypothetical population based on the Census it works out at 28.1 per mille. The infantile mortality rate was for the whole city 239 per thousand births, many due to bronchitis, "congenital debility" (?) and tetanus. The birth rate is given as 20.9 per mille. Still-births, mainly due to syphilis, were no less than 1 out of every 17 births.

Plague only caused 81 deaths in the year.

Cholera caused 866 deaths, and was at its worst in April and May. Tolly's Nullah is called "that notorious haunt of cholera."

Small-pox only caused 28 deaths.

Measles, which seems to prevail every third year, caused 138 deaths.

Enteric fever is credited with 209 deaths, mainly in August and September.

A good account is given of a local outbreak in a convent—20 cases, but only two deaths. A servant was suspected to be the "carrier".

To *malaria* are attributed 984 deaths (1.1 per mille).

Bowel complaints caused 2,577 deaths, or 2.9 per mille.

Tuberculosis, though certainly a very important cause of death, is credited with 1,539 deaths (or 1.7 per mille), and it is said to be now 30 per cent. lower than it was five years ago.

Influenza is not mentioned, but "respiratory diseases caused over 5 per mille of the death rate."

Ghee adulteration.—Our readers may remember the sudden sanitary impulse which led to the rapid passing of a special Act (September 1917). On its working Dr. Crake remarks:—

From the commencement of the new Act up to the end of the year under review 308 samples of ghee were analysed, of which 83 samples were obtained from wholesale dealers and 225 from retail vendors. Eighteen of

the wholesale dealers' samples and 40 of the samples from retailers were found adulterated; 55 prosecutions were instituted during the year for selling adulterated ghee, of which 17 were against wholesale dealers and 38 against retail traders. Convictions were obtained in 12 cases, the fines inflicted amounting to Rs. 1,214; 38 cases were pending at the close of the year, and 5 cases were struck off or otherwise disposed of. One case was instituted for keeping adulterants in a ghee godown and was pending. The number of prosecutions instituted for refusal to sell samples of ghee for analysis was 11; of these 7 were decided during the year, the accused being fined Rs. 830, and 4 cases were pending when the year closed. A big consignment of ghee consisting of 369 maunds were seized at a shop and godown in Cotton Street, and was ordered by the Municipal Magistrate to be destroyed to my satisfaction. The ghee was sold to the North-West Soap Company and was immediately alkalisied in the presence of a Food Inspector. The sale proceeds will be made over to the heirs of the original proprietors after deducting all the incidental expenses to which the Corporation were put. The Food Inspector, Dr. S. N. De, deserves to be congratulated for his promptitude in following up the result of analysis by seizure, for his successful conduct of the case in Court and for his vigilance during removal and at the time of alkalisiation.

Anti-malarial work.—On the work of the anti-mosquito brigade, Dr. Crake writes:—

Besides the above work, nearly 300 cesspits were treated several times, and in 169 cases obstructions to surface drains were removed in District III. In District IV, 3,552 children were examined and 146 cases of enlarged spleen were discovered, a spleen index of over 4 per cent. This is considerably higher than the figure given last year (2.8 for Wards 21 and 24). In connection with the proposal for the extension of the Lansdowne Road, an investigation was made to ascertain the sanitary condition of the area, and out of 484 children examined in October and November 1917, 65 had enlarged spleen giving a spleen index of over 13 per cent. These facts support my contention that there is more malaria in District IV than appears from the vital statistics.

From the more complete records kept in the district (every tank being examined regularly all the year round), it will be seen that there is a marked seasonal variation in the prevalence of anopheles. Broadly speaking anopheles are most prevalent in the cold season and least prevalent in the rains. The largest number of breeding grounds were found in December and the smallest in August. A great deal of useful work is carried out by the mosquito brigades, but it must be clearly understood that the present staff is really a nucleus on which I hope a complete organisation will gradually be built up.

BIHAR AND ORISSA HOSPITAL'S REPORT.

THIS big report is mainly statistical and there is but little which lends itself to extraction.

Tubercle of the lungs.—The number of cases treated for tubercle of the lungs increased from 4,021 with 95 deaths to 5,012 with 96 deaths. The increase may possibly be ascribed to better diagnosis. The tuberculosis ward at the Bhagalpur Sadr Hospital, which was under construction in 1916, has now been completed. Those at Chapra and Bankipore will be built soon. The Local Government have been pleased to sanction the construction of similar wards at Gaya and Munger, for which funds have been provided in the current year's budget.

Leprosy and Leper Asylums.—Leprosy gave practically the same number of admissions at the hospitals and dispensaries as in the preceding year, viz, 2,802 against 2,795, while the resident lepers treated in the eight leper asylums in the province numbered 1,373 against 1,337 in 1916. The number of beds available for leper inmates also remained almost the same. The decrease of 41 beds at Purulia was counterbalanced by the increase of 36 beds at Gaya. The total expenditure incurred on maintaining all the asylums amounted to Rs. 90,529 as compared with Rs. 87,207 in the previous year. In 1917 Government contributed towards the expenditure in connection with these asylums a total sum of Rs. 49,463, including a lump grant of Rs. 25,000 for improvements to the King Edward VII Memorial Leper Asylum at Gaya. The detailed scheme for the proposed leper asylum at Cuttack is under the consideration of Government and is expected to materialize soon. A lump provision of Rs. 1,00,000 has been made in the current year's budget towards the cost of the scheme.

The noticeable feature of the return is that the number of female patients treated in all classes of hospitals and dispensaries in the province increased from 955,242 in 1916 to 1,101,478 in 1917, or 15.31 per cent. The percentage of females to the total number of patients treated also rose from 27.58 to 28.93, which is, I think, satisfactory. In the Patna City, the Duchess of Teck Zanaana Hospital, which is maintained by the Zanaana Bible and Medical Mission and has been doing admirable work for the relief of the sick *pardanashin* women of the locality, was, during the year under review, brought on the list of the medical institutions recognized by the Medical Department, and its statistics have, for the first time, been included in the returns of the Department. The female hospitals at Chapra and Laheria-sarai, a reference to which was made in the last triennial report, were also opened in 1917. Of the total patients treated in classes I, III, and IV institutions, 5,106 were Europeans and Anglo-Indians, 2,116,675 were Hindus, 609,692 were Muhammadans, and 67,631 belonged to other classes. The figures for 1916 were 4,348, 1,910,239, 569,435, and 67,267, respectively.

Surgical operations.—The surgical operations performed in all classes of hospitals and dispensaries numbered 152,005 against 148,076 in 1916. In the institutions in classes I, III, and IV, 123,418 operations were performed on 121,970 patients in 1917 as compared with 118,325 and 117,048, respectively, in the preceding year. The results of these operations were as follows:—

YEAR.	Cured.	Relieved.	Discharged otherwise.	Died.
1917	96.81	2.71	.28	.20
1916	96.36	3.08	.36	.20

Correspondence.

HOSPITAL EQUIPMENT WANTED.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—There must be many mofussil hospitals which are in the same position as we are here. During the last four years we have not been buying hospital supplies except such as were essential, and in consequence we are very short of stock and needing badly to replace many things which have had to do during war time. There are now in some of the large military centres very extensive war hospitals, which will presumably be closed in the near future. If the equipment from these hospitals is to be sold, it would be a very real help to us in charge of Civil Hospitals, if it were possible for you, through the *Gazette*, to put us in touch

with those responsible for disposing of these supplies, or at any rate give ample notice if such sales are to take place.

Yours, etc.,

CHIKBALLAPUR, } J. WINTERBOTHAM, M.B., B.C.
MYSORE STATE.

JELLYFISH POISONING.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—During my stay at Cox's Bazar, as Assistant Surgeon in medical charge of the station, I have come across cases of jellyfish poisoning which may be of some interest to the profession, if recorded in your much esteemed journal. So I beg to state below briefly some of my experiences in this connection.

The first case noticed by me was in a Bengali gentleman, an officer of the Forest Department, aged about 26. He went for a sea bath one morning when here; I also accompanied him. While he was taking his bath he suddenly felt an intense pricking sensation in his left forearm. He said he was, as it were, lashed with a fine cane studded with prickles. At that time he noticed a jellyfish passing close by him. He immediately came out of the water and found some red marks on his left forearm. On examination I found three erythematous marks across the lower part of the flexor surface of the forearm; each of them was about 2" long $\frac{1}{2}$ " thick, situated one inch apart from one another. There was another mark of the same character on the dorsum of the forearm, near the elbow. I accompanied him to his house, which was near by. He all along complained of a pain of a severe burning character at the seat of the injury. Leaving him there I came back to my house, which was about ten minutes' walk from his. Soon after I was urgently called to attend him, and it was stated that his condition had become serious. I found him in a semi-recumbent posture, with difficulty of breathing. He complained of a marked choking sensation in his throat, inability to swallow anything, even liquids. He also said that he felt as if his chest had been put into a vice. Pulse was found to be 64 per minute and feeble, muscles of the chest and abdomen were in a state of spasm, more so the two abdominal recti, which were found to be very rigid; inspirations were short, but no marked variation was noticed in the frequency of respiration. While he was suffering from these symptoms local pain was a little less than what he felt before. Brandy and milk was prescribed, but he could take it only with difficulty. Symptoms continued for two hours and gradually passed off, but general weakness as after-effect remained throughout the day.

The second case noticed was that of a school boy, aged about 17, who also passed through the same symptoms. This boy also stated he was stung by a jellyfish while he was having his sea bath. He had three linear erythematous marks on the left chest. He was treated with bromides.

The third case was in a man of the signal station. He said that he was stung by a jellyfish, and was found to pass through the same symptoms described above, with the exception that the pulse beat was quicker than normal instead of being slower as in the two previous cases. He also was treated with bromides.

The fourth and fifth cases were of two European gentlemen. They got the symptoms after taking a sea bath one afternoon, and I was called to see them the next morning. They explained that they could not sleep the whole night owing to a sense of constriction in the chest and a severe pain in the whole body. They showed to me erythematous linear marks about the patella. Their pulse was normal at that time. The pain was still on them. They were treated with bromides.

I had an opportunity of holding an autopsy on a Mugh fisherman, aged about 29, of good musculature. He died under the following circumstances. He caught a boatful of fish in the sea, amongst which there were a number of jellyfish, and whilst throwing these off he suddenly felt a choking sensation in his throat and chest and could speak only with great difficulty, and he fell prostrate. He died on the way to hospital. On post-mortem examination, I found an unhealed, skin-deep incised wound across the ventral aspect of the index, middle and ring fingers of the right hand. There were no other external injuries. On opening the body, the scalp, meninges and the brain were found to be congested with blood; the great veins of the neck were engorged, pleura and lungs were healthy, the pericardium contained about half an ounce of clear yellow fluid, the heart was healthy but the ventricles were full of blood—the right more than the left. Other organs were healthy but congested.

These cases occurred during the months of May, June and July, 1917 and 1918, when the jellyfish were found to abound in number at no other times were they seen. I could find no description of jellyfish poisoning in any authoritative literature in detail. In Castellani and

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Chalmers' *Manual of Tropical Medicine* it is mentioned in a few lines which I beg to quote here: "The jellyfishes of European waters such as *Rhizostoma pulini* of the Mediterranean and *R. Cuvieri* of the English Channel are well known to cause local redness, swelling, and urticarial eruptions. The jellyfishes of the tropics produce the same symptoms but with greater severity. The pain is agonizing and there is collapse, with local swelling and redness. The treatment is to give stimulants internally and to apply alkalies, such as dilute ammonia, to the affected area. Usually recovery is complete and there are no after-effects." But nothing is said about the symptoms of spasm which occurred in all my cases; there were no urticarial eruptions either.

Yours, etc.,

COX'S BAZAR. } JATINDRASANKER ROY, M.B.,
17th November, 1918. } Medical Officer, Cox's Bazar.

SOME OBSERVATIONS ON "INFLUENZA."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—I am not attempting in this letter to give any elaborate or comprehensive history of the disease, nor do I consider it necessary to tire my readers by a repetition of its etiology, symptoms or pathological manifestations so ably and voluminously narrated in any good text-book of medicine. I shall only give, in brief, a few features of this disease that came to my notice in the recent epidemic.

The wave of pandemic influenza has been passing all over the world this year and it has not spared India in its way. Indore, like other places, could not escape from its ravages, and soon after the first wave of simple influenza passed away, in the months of August and September, when the only symptoms noticed were a mild naso-pharyngeal catarrh, slight fever and aching of the body, we had a serious outbreak in the first week of October last, when a large number of cases were seen drifting into a terrible kind of septic pneumonia. Immediately on the notice of a few such cases, a conference of all the medical men of the city was called up by the State Surgeon, Indore, to consider prompt measures to withstand and abate the disease. About a dozen and a half doctors volunteered to work in connection with the epidemic, and with the generous monetary help of the State more than a dozen medical depôts were opened in the city for free distribution of medicine. Some of us volunteered to visit patients in their houses and treat them, and we were aided in this arduous task by a corps of nearly 800 students volunteers, who went from door to door and carried medical relief. Besides these out-patients' dispensaries, the Maharaja Shivajirao High School, the Juna Indore School, and the State Theatre were temporarily converted into hospital wards to keep in-patients, he last being in charge of my friend Dr. V. R. Bhagwat.

I had the privilege of being placed in charge of two wards specially reserved for influenza patients in the Maharaja Tokoji Rao Hospital, where 45 beds were thus reserved for my patients. Besides nearly 1,000 out-patients, I treated during one month 218 in-patient cases, from 14th October to November 12th, 1918, out of which 100 were pneumonic, showing about 50 per cent. of the total number treated. It was observed that there was a large percentage of cures among cases treated in the hospital, showing a figure of 62 per cent. of such recovery, and any reports or rumours of 5 per cent. or 10 per cent. cures in penumonic influenza are simply unfounded. It is again of special interest to note that the mortality was invariably from amongst the pneumonic cases, and the simple non-pneumonic cases, if seen sufficiently early, always recover. In many of my cases there was double pneumonia also, and of the small percentage of fatal cases nearly 60 per cent. were admitted one week or more after the commencement of illness, when the disease had developed serious complications. Though a terrible disease, I have learnt from my personal experience that it can be successfully abated and cured if taken in hand early and proper nursing is available to the patients.

The treatment that has proved most efficacious in my cases has been as follows:—

Early in the case, before pneumonic complication takes place, I prescribe a mixture of citrate of potash and acetate of potash.

In all the cases I have seen that with the above mixture the disease is at once aborted and the temperature comes to normal. In cases where there is pneumonia (which is always broncho-pneumonia), I prescribe the following:—

Ammon. Carb.	...	...	grs. 20.
Ammon. Chloride	...	...	dr. 1.
Pot. Acetas	...	...	dr. 1.
Pot. Citras	...	...	dr. 1.
Tincture Cinchona Co.	...	...	drs. 2.
Spirit Ammonia Aromatic	...	...	drs. 2.
Spirit Vini Gallici	...	...	ozs. 4.
Aqua	...	...	...

A quarter every third hour. (If the patient is serious continue mixture even during night.)

Rai pastes or plasters on the affected areas. (In cases where money can be spent liberally, the costly treatment of Antiphlogistin paste has also been found useful.)

With the above mixture the pneumonic condition resolves quickly and the patient gets over the disease almost always, except when he is extremely serious, and taken late in hand, has both the lungs fully affected, and the pulse tone quite soft.

In a large number of cases, an intractable cough is left behind, and for this I have found sodii. benzoas and large doses of ammon. chloride and ammon. carb. very useful. If the pulse is good and even both the lungs are affected, the case is hopeful. Pulse tone is a very valuable guide in the prognosis.

Then besides this, I have inferred certain facts of particular interest about this disease which can be summarized as under:—

1. Influenza is almost always amenable to treatment if observed sufficiently early, and the mortality is always from amongst pneumonic cases.

2. Double septic pneumonia is a more serious condition than single pneumonia, and in single pneumonia the left lung is more often involved than the right.

3. Broncho-pneumonia as a complication of influenza has these features of its own:—(i) Dulness is rarely present. (ii) Pain in the chest is almost always absent. (iii) Hæmoptysis is not so common as in ordinary lobar pneumonia. (iv) Epistaxis is more common. (v) One patch after another is successively affected, pneumonia resolving in one place and coming on in another; thus (vi) Exhibiting frequent relapses, sometimes one, sometimes two, and even three. Relapse is more serious than the first attack.

4. The tone of the pulse is a very valuable guide, and cases of double pneumonia even are cured if the tone of the pulse remains good.

5. Rai plasters, pastes and fomentations play a great part in bringing about a cure.

Then I have noticed the following complications and after-results, which are also interesting:—

1. Broncho-pneumonia,—very frequent complication and seen in a large number of cases.

2. Urticarial eruptions seen by me in one case, but reported by my friend in others also.

3. Joint pains (but rarely), sometimes giving rise to local abscesses.

4. Two cases of impaired vision were noticed by me, in which there were distinct signs of retinitis, one reported by my friend Dr. V. R. Bhagwat.

5. One case of cancrum oris was observed.

6. Extreme cardiac asthma is a frequent after-result, and the patient takes a long time for convalescence, rendering him unfit for ordinary work for a month or more after the illness.

7. Deafness has been noticed in four cases, but it is to be seen whether this remains permanent or disappears in course of time.

8. Insanity was observed in two of my cases, and in one reported by my friend Dr. V. R. Bhagwat.

9. Intense abdominal colic sometimes is a symptom of an attack of influenza.

Thus it will be seen how curious are some of its complications, and the disease being one of general poisoning of the whole system, it may be discovered by the experience of other members of the profession what other organs are likely to be affected in this malady. By a joint experience it is likely that we may learn more about the nature of this calamity than is hitherto known, and remedy being subsequent to knowledge of its nature, we might by better knowledge begin to find out a more effective method of cure and prevention.

INDORE,
21st November, 1918.

S. S. VYAS, M.A., LL.B.,
Sub-Assistant Surgeon,
Maharaja Tokoji Rao Hospital.

"AN UNCLASSIFIED FORM OF LONG CONTINUED PYREXIA IN MESOPOTAMIA. (? DISSEMINATED NOCARDIOSIS.)"

To the Editor of the INDIAN MEDICAL GAZETTE.

SIR,—In reference to the paper which appeared in the *Indian Medical Gazette* for September 1918 under this heading, pp. 321, et seq., further investigations do not bear out the suggestions I made that the disease might be due to disseminated nocardiosis, at any rate in the British cases, which were the most striking and with which my investigations were solely concerned. Further examination of the original sections suggests that the fungus-like tuft may be the result of outside contamination, especially as no more can be found in fresh pieces of the organs.

One of the cases turned out at the autopsy to be kala-azar in spite of two negative visceral punctures

during life, whilst an invasion of the lung by a fungus of the aspergillus type was proved after death.

This was the case from whose blood a streptothrix-like fungus was believed to have been isolated.

There are undoubtedly some cases where streptothrix fungi have been found in the pus from local abscesses, but the presence of air-borne fungi, which are at present indistinguishable from the pathogenic variety has been shown to exist, so that the very large number of cultural results that have been obtained must be considered *sub judice*.

As regards the type of long continued fever described by Lt.-Col. Sprawson, I.M.S., if it is a separate clinical entity, its pathogeny remains undetermined, as far as my observations are concerned.

Lt.-Col. Ledingham, R.A.M.C., is also of this opinion.

F. B. MACKIE,

Major, I.M.S.

MAJOR Mackie has asked me to forward the above note. Some of the Indian cases described by me in that paper, including cases Nos. 7 and 9, where the possibility of tubercle was mentioned, have proved post mortem to be tuberculous. Regarding the British cases, the result of Major Mackie's further observations is to leave their pathogeny obscure; their subsequent history and pathological examinations have as yet (so far as I have heard) added nothing that throws light on their nature. In another case the streptothrix has been found present in multiple abscesses in several organs; but such cases have been described before. The case referred to by Major Mackie as having proved post mortem to be kala-azar was not one of the series described by me.

Yours, etc.,

C. A. SPRAWSON,

Lt.-Colonel, I. M. S.

12th November, 1918.

THERAPEUTIC NOTICE.

A CORRECTION.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—In the August issue of the *Indian Medical Gazette*, under "Therapeutic Notices," on page 314, we came across the following:—

"Messrs. Martin and Harris, of Calcutta, are advertising the well-known preparations of the firm Emil Scheller, of Zurich, a Swiss firm founded in 1877. Their ESCA SYRUP is a tonic syrup made up of Potassium Sulphoguaiaaculate (or *Thiocol*), and the Hypophosphites of lime, soda and manganese, combined with pine tar, Virginian prime and other demulcents. It is specially recommended for catarrhs and colds."

Perhaps you are not aware that the word *Thiocol* was registered by us some years ago in India, and elsewhere, and consequently any firm using our registered trademark "Thiocol" in connection with the advertising of their products is infringing our rights, and in view of the trouble we have experienced in the past in the matter of the substitution of *Thiocol* 'Roche' we intend to take stringent measures in all future cases. We do not for one moment suggest that you were cognisant of the circumstances, and fully realize that you acted in ignorance. We are therefore merely writing you in order that you may be quite clear as to the position in the future, and also that should further matter in the way of advertisements, etc., of competitive lines for insertion in your esteemed journal have reference to our registered mark "Thiocol" you will be able to draw the advertisers' attention to the fact that they lay themselves open to prosecution by mentioning our registered trade mark "Thiocol" in their advertisements, etc.

For your guidance we will state that our Agents in India, Messrs. J. Murray & Co., Ltd., of Bombay, Calcutta, etc., are in communication with Messrs. Martin and Harris, and we trust the matter will be settled amicably.

Yours faithfully,

THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD.

[We are glad to publish the above correction.—ED., I.M.G.]

Service Notes.

THE number of casualties among officers reported during the fourteen days, 25th September to 8th October inclusive, was high—3,180—but a good deal lower than that of the preceding fortnight. They may be tabulated as follows:—

Killed	...	...	...	848
Died ...	...	...	...	46
Wounded	...	...	...	1,980
Missing	...	...	...	234
Prisoner	...	...	...	72
TOTAL				3,180

The number of casualties among medical officers, 52, was also high. The large proportion of killed to wounded is noticeable, as also the very high proportion of senior officers in the list, a far higher proportion than usual. The names are given below. All not otherwise noted are temporary officers of the R.A.M.C. Temporary Lieutenant-Colonel K. W. Mackenzie, D.S.O., M.C., R.A.M.C., was formerly a Captain in the I.M.S., but resigned his commission before the war.

Killed and died of wounds.—Lieutenant-Colonels R. T. Collins, D.S.O. (R.A.M.C., Regular), and F. H. Bradley, D.S.O. (R.A.M.C., Regular); Majors J. Hughston, H. B. Gorman, M.C., T. F. P. Breen (R.A.M.C., Regular), and C. McN. McCormack (R.A.M.C., Regular); Captains J. T. Kirkland, M.C., C. H. Fischel (S.R.), L. E. W. Roberts (Australians), and C. R. Howard, K. McA. Ross; Lieutenant M. J. O'Flynn, Surgeons A. R. MacMullin, D.S.C. (R.N.), and F. P. Pocock; D.S.O., M.C. (R.N. Temporary); and Surgeon Probationer N. C. Ward (R.N.V.R.).

Died.—Major A. Johnston; Captains J. F. Graham (Canadians), and J. Wood (L.D.S., R.A.M.C.); Lieutenants L. S. Ramier (I.M.S.), and D. Taylor; Staff Nurse M. Townsend (Q.A.I.M.N.S.R.); and Mrs. W. Bailey (V.A.D.).

Wounded.—Lieutenant-Colonels K. W. Mackenzie, D.S.O., M.C., and A. S. Donaldson, D.S.O. (Canadians); Majors W. Russell, M.C. (T.F.), E. S. Sowerby, M.C., A. R. Dale, M.C. (S.R.), C. B. Davies, M.C., and W. Vickers (Australians); Captains G. R. Phillips, J. McCusker (Australians), K. McLean (Australians), J. H. Campaign, W. K. Flock (Australians), R. H. Fleming, H. K. Ward, M.C. (S.R.), E. C. Bowden, N. F. Graham, D. R. Wark (Canadians), W. H. Johnston, G. A. C. Gordon, D. Barlow, M.C. (Australians), C. E. Driscoll, R. Goulden (Canadians), J. H. Barry (Canadians), and H. M. Cameron (Canadians); Lieutenants G. E. Birkett (S.R.), H. A. Chodak, and F. Cameron (S.R.); Staff Surgeon G. R. Atkinson, D.S.O. (R.N.); and Surgeon J. E. L. Roberts (R.N.).

Missing.—Captains J. Buchanan and W. C. D. Witson (T.F.).

Prisoner.—Major and Quarter-Master E. J. Tilbury (R.A.M.C., Regular).

Major Alexander Johnston, R.A.M.C., died at a nursing home in Glasgow on 22nd September, 1918. He was educated at Glasgow University, where he graduated as M.B. and C.M. in 1883, and as M.D. in 1889, also taking the D.P.H. Cambridge in 1893. After filling the posts of Resident Medical Officer of the Victoria Hospital, Burnley, House Surgeon of Wrexham Infirmary, and Medical Superintendent of Mousall Hospital, Manchester, he settled in Glasgow, where he was Deputy Medical Officer of Health, and Senior Physician Superintendent of the City of Glasgow Hospitals. He held a temporary commission as Major in the R.A.M.C. from April 1915, and was recently in command of the Thornhill Military Hospital, Aldershot.

Lieutenant-Colonel Reginald Thomas Collins, D.S.O., R.A.M.C., was killed in action on 18th September, 1918, aged 38. He was born on 22nd December, 1879, the only son of Dr. Wolfenden Collins, late of Sydenham, and was educated at Guy's Hospital, taking the M.R.C.S. and L.R.C.P. London in 1902. He entered the R.A.M.C. as Lieutenant on 31st August, 1903, became Captain on 28th February, 1907, Major on 28th February, 1915, and temporary Lieutenant-Colonel on 11th September, 1916. He received the D.S.O. on 1st January 1918, and also had the Croix de Guerre.

Captain James Towers Kirkland, M.C., R.A.M.C., was killed in action on 18th September 1918. He was the youngest son of Archibald Kirkland, of Newmains, and was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1909, subsequently filling the posts of House Surgeon and Casualty House Surgeon at Glasgow Royal Infirmary, and of House Surgeon to the Glasgow Maternity and Women's Hospital. He took a temporary commission as Lieutenant in the R.A.M.C. on 2nd December, 1914, was promoted to Captain on completion of a year's service, and received the Military Cross on 14th January, 1916. He was attached to the Gloucestershire regiment when killed.

Captain L. E. W. Roberts, Australian Army Medical Corps, was reported as having died of wounds, in the casualty list published on 27th September, 1918.

Captain Charles Reginald Howard, R.A.M.C., attached King's African Rifles, was killed in action in East Africa on 6th September, 1918. He was the youngest son of Robert Luke Howard, of Plymouth, formerly of St. Albans, and was educated at Guy's Hospital and at Cambridge, where he graduated as B.A. (with honours), M.B. and B.C. in 1904.

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and M.D. in 1907, also taking the M.R.C.S. and L.R.C.P. London in 1902. After acting as Assistant House Surgeon and House Surgeon at Guy's, he went to Zanzibar as Bacteriologist to that Government. Returning to England, he settled in practice at Garston, Frome, Somerset, where he was Honorary Surgeon to the Victoria Hospital, Frome, Medical Officer of Health to the Frome Rural District Council, and Assistant School Medical Officer to the Somerset County Education Committee. He took a temporary commission as Lieutenant in the R.A.M.C. on 1st March, 1916, and was promoted to Captain on completion of a year's service.

Captain Claude Henry Fischel, R.A.M.C. (S.R.), attached Leicestershire Regiment, died of wounds on 14th September, 1918, aged 28. He was the only son of the late H. J. Fischel, of Hampstead. He took the L.M.S.S.A. in 1914, joined the Special Reserve of the R.A.M.C. on 28th November, 1914, and was called out for service on 28th May, 1915.

Captain James Wood, L.D.S., attached R.A.M.C., died at Salonika on 14th September, 1918. He was the third son of Andrew Wood, of Tantallon Place, Edinburgh, was educated at George Watson's College in that City, and took the L.D.S. of the Edinburgh College of Surgeons in 1914. He was a member of the Lothian and Border House, was embodied in August 1914, and went to the front in August 1915. He subsequently received a commission for service as a Dental Surgeon.

Captain James Steel, M.C., R.A.M.C. (S.R.), was killed in action on 2nd September, 1918, aged 25. He was the only son of Mr. D. F. Steel, of Dennistoun, Glasgow, and was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1916, having acted as Resident Assistant at Glasgow Eastern District Hospital during his final year. On qualifying he took a commission as Lieutenant in the Special Reserve of the R.A.M.C., and soon after went to France, where he served successively with the Royal Sussex Regiment and with the Somerset Light Infantry, with which he was serving when killed. He received the Military Cross for services with the Sussex during the retreat of March 1918, when he was with his battalion throughout the retirement, the award being gazetted, after his death, on 16th September.

Major Hugh Bernard German, M.C., R.A.M.C., was killed in action on 18th September, 1918, aged 38. He was the eldest son of the late Alexander German, and of Mrs. German, of Southsea, was educated at Guy's Hospital, and took the M.R.C.S. and L.R.C.P. London in 1904. He then entered the Royal Navy as Surgeon, and while in the Navy received a medal for his services in connection with the Calabrian earthquake of 1908, and also the order of the Crown of Italy. He resigned while still holding the rank of Surgeon, and went into practice at Waltham Abbey, Essex. He held a temporary commission as Captain in the R.A.M.C., dated 8th January, 1916, and had since been promoted to Acting Major. He received the Military Cross on 4th February, 1918, and a Bar thereto on 16th September.

Captain Kenneth McAlpin Ross, R.A.M.C., was killed in action on 17th September, 1918, aged 26. He was the second son of the late Dr. Ross, of Paisley Road, Glasgow, and was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1915. Immediately afterwards he took a temporary commission as Lieutenant in the R.A.M.C. and was promoted to Captain on completion of a year's service.

Lieutenant-Colonel Frederick Hoysted Bradley, D.S.O., R.A.M.C., was killed in action on 22nd September, 1918, aged 34. He was born on 22nd November, 1883, the youngest son of the late Canon Bradley, of Monaghan, and was educated at Campbell College, Belfast, and at Edinburgh University, where he graduated as M.B. and Ch.B. in 1906. He entered the R.A.M.C. as Lieutenant on 4th February, 1908, was promoted to Captain on 4th August, 1911, and during the war he was serving in India, came to France in September 1914, and had served there ever since. He received the D.S.O. on 1st January, 1918.

Major Campbell McNeill McCormack, M.C., R.A.M.C., was killed in action on 21st September, 1918. He was the youngest son of William McCormack, of Hillhall House, Lisburn, and was educated at Lisburn School and at Belfast University, where he graduated as M.B., B.Ch. and B.A.O. in 1914. He took a commission as Lieutenant in the Special Reserve of the R.A.M.C. on 5th February, 1914, and joined for duty on 6th August, 1914. Early in 1917 he took a commission in the Regular R.A.M.C., and a year later became Captain. In January 1916, he was mentioned in despatches, and on 22nd September, 1916, he received the Military Cross. He was recently wounded.

Major J. Hughston, R.A.M.C., was reported as having died of wounds, in the casualty list published on 28th September, 1918. He took a temporary commission in the R.A.M.C. as Lieutenant on 20th April, 1915, was promoted to Captain on completion of a year's service, and in the meantime, Gurukul Kangri Collection, Haridwar

Major Thomas Francis Penefather Breen, R.A.M.C., was killed in action on 18th September, 1918, aged 29. He was the elder son of the late Inspector-General Breen, R.N., and was educated at Stonyhurst and at Trinity College, Dublin, where he graduated as M.B., B.Ch. and B.A.O. in 1912. After acting as Senior House Surgeon of the Mater Misericordiae Hospital, Dublin, he entered the R.A.M.C. as Lieutenant on 30th January, 1914, was promoted to Captain on 30th March, 1915, and had since received an Acting Majority. He went to France with the First Expeditionary Force in August 1914, was with No. 11 Field Ambulance in the retreat from Mons, and had served in France ever since, part of the time in command of a Field Ambulance, and twice acting as D.A.D.M.S.

Surgeon Frank Pearce Pocock, D.S.O., M.C., R.N., died of wounds on 29th September, 1918, aged 27. He was the younger son of Charles Wellesley Pocock, of Portshead, formerly of Ealing, and was educated at King's College, London, and at Westminster Hospital, taking the M.R.C.S. and L.R.C.P. London in 1913. He took a temporary commission as Surgeon in the Navy at the beginning of the war, and for some time served on H.M.S. *Colossus*. He received the D.S.O. on 23rd July, 1918, and had previously gained the Military Cross.

LIEUTENANT LAKSHMINARAYANAPURAM SUBRAMANIER RAMIER, I.M.S., died in the 3rd London General Hospital, Wandsworth, September 1918, aged 25, of tubercle contracted on duty in France. He was a Southern India Brahman, and was educated at Madras University, where he graduated in 1916, as M.B. and B.S., gaining gold medals in Clinical Surgery and Medicine, and also for being the most distinguished medical graduate of the year. He was also Captain of the Cricket Eleven, and a member of the Football Eleven of Madras Medical College. Coming to England, he took the M.R.C.S. and L.R.C.P. London in 1916, and received a permanent commission in the I.M.S. on 23rd January, 1917. He served for some time on a hospital ship, and then in charge of the tubercle wards in an Indian General Hospital at Marseilles, and was invalided to England in June 1918.

LIEUTENANT MICHAEL JOSEPH O'FLYNN, R.A.M.C., attached Northampton Regiment, died of wounds on 24th September, 1918, aged 33. He was educated at the Catholic College, Dublin, and at Queen's College, Galway, and graduated as M.B., B.Ch. and B.A.O. of the Royal University, Ireland, in 1903, and as M.D. in 1907. After acting as House Surgeon of the Wolverhampton and Midland Counties Eye Infirmary, and as House Physician of the Salisbury Hospital, he went into practice at Neath, Glamorgan. He took a temporary commission as Lieutenant in the R.A.M.C. in November 1917.

Captain James Cotton Forsyth, Canadian Army Medical Corps, died of wounds at sea in his passage home to Canada, on 8th September, 1918. He was born at Mount Bridges on 3rd March, 1871, and educated at the Western University, London, Ontario, where he graduated in 1894. He joined the Canadian A.M.C. in April 1916, served in England till July 1917, when he went to France, and was attached to No. 1. Canadian General Hospital, with which he served till invalided in June 1918.

Captain Thomas Fleck Graham, Canadian Army Medical Corps, died suddenly of cardiac failure on 20th September, 1918, aged 35. He was born on 20th August, 1883, at Guelph, Ontario, the son of Alexander Graham of Brantford, Ontario, and educated at Toronto University, where he graduated in 1914. He joined the Canadian A.M.C. in July 1916, and after serving in England for some months, went to a hospital in France.

Lieutenant Douglas Taylor, R.A.M.C., died of dysentery and malaria in hospital at Salonika on 26th July, 1918, aged 23. He was the only son of the late Dr. John Taylor, of Whiteinch, Glasgow, and was educated at Glasgow High School and Glasgow University, where he graduated as M.B. and Ch.B. in 1917. During his final year he acted as Clinical Assistant at Govan District Asylum, Hawkhead. He had only recently taken a temporary commission in the R.A.M.C.

THE number of casualties among officers reported during the fourteen days, 9th to 22nd October, 1918, inclusive, reached the very high total of 4,526, almost equalling the figures of last March. On one day, 14th October, no less than 562 were reported. They may be tabulated as follows:—

Killed ...	...	...	...	1,210
Died ...	...	...	...	47
Wounded ...	...	...	...	2,893
Missing ...	...	...	...	281
Prisoners ...	...	...	...	95

TOTAL ... 4,526

The number of casualties among medical officers was also high, 68, including four nurses. The names are given below. All, not otherwise noted, are temporary officers of the R.A.M.C.

Killed and died of wounds.—Captains G. M. Cowper, R. P. Young (Australians), K. Elmes, J. A. Stanley, A. Ross (Canadians), J. M. McLaggan, M.C., G. A. G. Barser, (T.F.), W. B. Jack, H. A. Culham (Canadians), H. E. Kirkland, M.C. (Australians), W. S. B. Hay, C. L. Dold, J. James (Regular, R. A. M. C.), E. L. Jones, A. A. Parker, M.C. (Canadians); Lieutenants W. L. Dandridge (S.R.), D. G. K. Garrett.

Lost at sea.—Lieutenant-Colonel E. F. H. Dobson (I.M.S., Retired); Captain D. Burns; Surgeon-Lieutenant B. Lewitt (R.N.); Dr. T. R. Beale-Browne (W.A.M.S.); Misses S. V. Barrett (V.A.D.), and D. M. Jones (V.A.D.).

Died.—Colonel G. H. Van Zyl (South African); Majors T. P. Priestley (Regular, R.A.M.C.), G. H. McNichol; Captains B. H. Leigh, G. Finch (T.F.), G. S. Brock (I.M.S.), L. C. Crockett (L.D.S., attached R.A.M.C.); Lieutenant E. H. Glenny (S.R.); Dr. C. F. W. Watson (W.A.M.S.); Sister G. E. Munro (Australians); Miss L. Liddell, V.A.D.

Wounded.—Lieutenant-Colonels H. L. Welch (Australians), W. W. Boyce (Regular, R.A.M.C.), M. R. Taylor, D.S.O. (S.R.); Majors T. J. Kelly, M.C. (S.R.), T. Ferguson, W. Hunt, M.C. (S.R.), T. J. Lindsay (S.R.), J. Vallance (S.R.), H. C. Adams (T.F.); Captains R. J. Snider, W. K. Acheson, M.C., W. C. Morgan (Canadians), G. B. Egerton (S.R.), H. S. Berry, A. McA. Blackley (Canadians), J. C. Dunn, D.S.O., M.C., D.C.M., B. M. Tukey, M.C. (S.R.), H. E. B. White (S.R.), H. G. Young, D.S.O. (Canadians), F. S. Bedale, M.C. (T.F.), H. M. Joseph, F. B. Day (Canadians), A. H. McLean (Australians), R. E. Matters (Australians), A. Wilson, I. D. Stubbs (T.F.), W. A. Coats, W. E. R. Dimond, S. Hodgson, M.C.; Captain and Quartermaster E. S. H. Caple (T.F.); Lieutenants G. P. W. Stamston, M. C. Paterson, W. Hickey, H. E. D. Mathur (I.M.S., Temporary).

Captain Geoffrey Moore Cowper, R.A.M.C., died of wounds, on 3rd October, 1918. He was the son of Mr. Cowper, of Darlington, was educated at Cambridge and St. Bartholomew's Hospital, and took the M.R.C.S. and L.R.C.P. London in 1914. He took a temporary commission as Lieutenant in the R.A.M.C. on 29th August, 1914, in the first month of the war, was promoted to Captain after a year's service, and was recently serving in the 35th Field Ambulance, but was attached to the Dorsetshire Regiment when killed.

Lieutenant William Leslie Dandridge, R.A.M.C., died of wounds on 3rd October, 1918, aged 24. He was the youngest son of Alfred Dandridge, of Beckenham, Kent, and had only recently qualified, and joined the Special Reserve of the R.A.M.C. in February, 1918. He was serving in the 103rd Field Ambulance.

Captain John Williamson Frew, R.A.M.C., died of wounds in No. 8 General Hospital on 8th October, 1918. He was the second son of the late William Frew, of Leamington Terrace, Edinburgh, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1906, afterwards going to South Africa, where he was in practice at Moherh's Ford, Barkly East, Cape Province. He took a temporary commission as Lieutenant in the R.A.M.C. on 11th October, 1915, and was promoted to Captain after a year's service.

Major Percival Thomas Priestley, R.A.M.C., died of influenza at Salonika on 28th September 1918, aged 30. He was born on 1st February, 1888, the only son of the late Reverend Thomas Priestley, Vicar of Allbrighton, and was educated at Birmingham University, where he graduated as M.B. and Ch.B. in 1913, after taking the M.R.C.S. and L.R.C.P. London in 1912. After filling the posts of House Surgeon and House Physician at the General Hospital, Birmingham, he entered the R.A.M.C. from the Special Reserve, as Lieutenant on 31st July, 1914, was promoted to Captain on 30th March, 1915, and was subsequently to an Acting Majority.

Captain R. P. Young, Australian Army Medical Corps, was reported as killed in action, in the casualty list published on 10th October, 1918.

Captain A. Ross, Canadian Army Medical Corps, was reported as killed in action, in the casualty list published on 14th October, 1918, and Captain H. A. Culham, of the same corps, in that of 16th October, 1918.

Captain Benjamin Hinton Leigh, R.A.M.C., died at Manor War Hospital, Epsom, on 9th October, 1918, of illness contracted on foreign service, aged 51. He was educated at the Universities of Manchester and Edinburgh, and took the Scottish triple qualification in 1896. He then went to South America, and was for some years in practice in Peru, but had retired before the war. He took a temporary commission as Lieutenant in the R.A.M.C. on 1st April, 1915, and was promoted to Captain on completion of a year's service.

Dr. Thomas Richard Beale-Browne, Public Health Officer, Medical Staff, was lost at sea in the S.S. *Burutu*, sunk in a collision on 3rd October, 1918. He was the eldest son of

Lieutenant-Colonel G. E. Beale-Browne, of Dowdeswell House, Gloucestershire, and was educated at Guy's Hospital, taking the M.R.C.S. and L.R.C.P. London in 1901. After acting as Assistant Medical Officer of Northampton County Asylum, he joined the W.A.M.S. He had served on the Anglo-German Boundary Commission, which demarcated the frontier from Yola to Cras River, between the British and the (then) German colonies in West Africa.

Miss Sophia Violet Barrett, V.A.D., was lost in the R.M.S. *Leinster*, torpedoed and sunk by a German submarine, soon after leaving Dublin for Holyhead, on 10th October 1918. She was the younger daughter of the late Samuel Barrett, J.P., of Ballintra, County Galway, and was returning from leave to duty in France. Miss Dorothy May Jones, V.A.D., was also lost in the *Leinster*.

Captain King Elmes, R.A.M.C., was reported as killed in action, in the casualty list published on 14th October, 1918. He took the L.R.C.P. and S.I. in 1916 and at once took a temporary commission in the R.A.M.C., being promoted to Captain after a year's service. He resided at New Ross, and was attached to the London Regiment when killed.

Captain J. A. Stanley, R.A.M.C., was reported as killed in action, in the casualty list published on 14th October, 1918. He originally joined the Canadian Army Medical Corps as Lieutenant, was transferred to the R.A.M.C. as a temporary Lieutenant in the middle of 1916, and promoted to Captain after a year's service. He was attached to the Warwickshire regiment when killed.

SURGEON-GENERAL SIR ALEXANDER CHRISTISON, Bart., Bengal Medical Service, retired, died at his residence, 40, Moray Place, Edinburgh, on 14th October 1918, aged 90. He was born on 26th August, 1828, the eldest son of the late Sir Robert Christison, Professor of Medical Jurisprudence and afterwards of Materia Medica, at Edinburgh University, and was educated at Edinburgh Academy and at the University in that City, where he graduated as M.D. in 1850, gaining a gold medal for his thesis on *Cannabis Indica*. Entering the I.M.S. as Assistant Surgeon on 20th October, 1851, he became Surgeon on 24th March, 1864, Surgeon-Major on 20th October, 1871, and Deputy Surgeon-General on 31st March, 1877, and shortly after was appointed Surgeon-General (local rank) as Chief Civil Medical Officer of the North-West, now the United Provinces. He retired on 24th November, 1882, with the honorary rank of Surgeon-General. He served with the 4th Sikh Infantry in the second Burmese War of 1852, took part in the capture of Rangoon in April 1852, and received the medal, with a clasp. In the Mutiny he served with Meade's Horse, and afterwards with the 13th Bengal Infantry, was present at the capture of Gwalior, and gained the medal, with a clasp. After the Mutiny he was appointed Superintendent of Vaccination at Agra, and Lecturer on Surgery in the Agra Medical School, subsequently becoming Principal of the School, Superintendent of the Agra Lunatic Asylum, and Civil Surgeon of Agra, and held these appointments until his promotion to administrative rank. On 23rd January, 1882, shortly before his retirement, he succeeded his father as Second Baronet (created 1871). He had twice been married, his younger son, Lieutenant F. G. Christison, Argyle and Sutherland Highlanders, was killed in action in December, 1915. Since the death of Surgeon-General Beatty, in November 1916, he had been the senior officer on the retired list of the I.M.S. The senior now is Deputy Surgeon-General C. T. Paske, who is less than one year junior in service to, and two years younger than, himself.

CAPTAIN JAMES MURRAY McLAGGAN, M.C., R.A.M.C., was killed in action on 4th October, 1918, aged 27. He was the elder son of James McLaggan, of Bank House, Torphins, Aberdeenshire, and was educated at Aberdeen University, where he graduated as M.B. and Ch.B. in 1913. He joined the R.A.M.C. as a temporary Lieutenant, on 22nd August, 1914, in the first month of the war, was promoted to Captain on completion of a year's service, and was attached to the Royal Fusiliers, the City of London Regiment, when killed. He gained the Military Cross on 4th November, 1915.

Captain William Boyd Jack, R.A.M.C., died of wounds on 11th October, 1918, aged 38. He was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1905 and as M.D. in 1908, and, after acting as House Surgeon and House Physician of Glasgow Royal Infirmary, went into practice at Kendal, where he was Honorary Surgeon to the Westmoreland County Hospital, Police Surgeon, and Medical Officer, and Public Vaccinator of the Grayrig district of Kendal Union. He took a temporary commission in the R.A.M.C. early in 1917, and was promoted to Captain after a year's service.

Captain Geoffrey Alwyn Gershom Bousier, R.A.M.C. (T.F.), was killed in action on 29th September, 1918, aged 29. He was educated at Brighton College, King's School, Worcester and Cambridge, where he graduated as B.A. in 1910, and at London in 1914. After acting as Clinical Assistant in the Children's Surgical Department and as Casualty Officer at

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St. Thomas', he took a commission as Lieutenant in the R.A.M.C. (T.F.), in 1915, and was promoted to Captain after a year's service. He was attached to the Norfolk Regiment when killed, and had served in Egypt, Palestine and France.

Captain George Finch, R.A.M.C. (T.F.), died of pleuro-pneumonia in the Officers' Hospital at Basra on 8th October, 1918. He was educated at Leeds University and at St. Thomas' Hospital, and took the M.R.C.S. and L.R.C.P. London in 1905, and also the D.P.H. Oxon in 1910. After filling the posts of Assistant House Surgeon at the Royal Westminster Ophthalmic Hospital, of House Physician at the Brumpton Consumption Hospital, and of Assistant School Medical Officer to the East Sussex County Council, he took the appointment of Assistant to the County Medical Officer of Health for East Suffolk. On the outbreak of war he joined the 3rd East Anglian (Howitzer) Brigade of Royal Field Artillery (T.F.), as Lieutenant and Medical Officer, on 11th August, 1914, and became Captain in the 3rd London General Hospital on 1st April, 1915.

Lieutenant D. G. K. Garratt, R.A.M.C., was reported as killed in action, in the casualty list published on 17th October, 1918. He only qualified in the beginning of 1918, and immediately afterwards took a temporary commission as Lieutenant in the R.A.M.C.

Captain Ernest Howard Glenny, R.A.M.C., died of pneumonia on active service on 9th October, 1918. He was educated at St. Bartholomew's Hospital, took the M.R.C.S. and L.R.C.P. London in 1917, and soon after joined the Special Reserve of the R.A.M.C. as Lieutenant, being promoted to Captain after a year's service.

Captain Hugh Edward Kirkland, M.C., Australian Army Medical Corps, was killed in action on 3rd October, 1918. He was the younger and only surviving son of the late Dr. Hugh Kirkland, of Darvel, Lithgow, New South Wales. He received the Military Cross on 18th January, 1918.

Surgeon Benjamin Lewitt, R.N., temporary, was lost in *H. M. S. Oleano* which was sunk in a collision off the North Coast of Ireland, on 6th October, 1918. He was educated at St. Mary's Hospital, where he gained an Entrance Scholarship in Science, took the L.S.A. in 1900, and the L.M.S.S.A. in 1907, and was in practice at Clacton-on-Sea before the war.

Captain William Stevenson Brown Hay, R.A.M.C., was killed in action on 6th October, 1918. He was the son of the late Mr. George C. Hay, of Belfast, and was educated at the Methodist College in Belfast, and at Belfast University, where he graduated as M.B., B.Ch. and B.A.O. in 1914, subsequently acting as Demonstrator in Anatomy, till he took a temporary commission as Lieutenant in the R.A.M.C. on 25th May, 1915. He went to France in October 1915, was promoted to Captain on completion of a year's service, and was attached to the Royal Field Artillery when killed.

Captain Cedric Lewis Dold, R.A.M.C., was reported as killed in action, in the casualty list published on 22nd October, 1918. He was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1914, and at once took a temporary commission as Lieutenant in the R.A.M.C. on 12th August, 1914, a week after war was declared. He was promoted to Captain after a year's service, and was attached to the South Wales Borderers (24th Fort), when killed.

LIEUTENANT-COLONEL EDWIN FRANCIS HORATIO DOBSON, Bengal Medical Service, retired, was lost on the Japanese S. S. *Hirano Maru*, which was torpedoed and sunk by a German submarine, with great loss of life, off the North Coast of Ireland, on the way to the Cape, on 5th October, 1918. He was educated at the Middlesex Hospital, and at the Universities of Edinburgh and Aberdeen, and graduated at the latter as M.B. and Ch.B. in 1878. Entering the I.M.S. as Surgeon on 2nd October, 1880, he became Surgeon-Major on 2nd October, 1892, Lieutenant-Colonel on 2nd October, 1900, was placed on the selected list on 21st November, 1905, and retired on 27th November 1910. The *Army Lists* ascribe him no war service. After some years of military duty, he was appointed Civil Surgeon of Dhubri, Assam and while acting as Inspector of Immigrants, labourers on their way to the Assam tea gardens, was the first Medical Officer to draw attention to the fact that the anaemia so prevalent among tea garden coolies was in great part due to intestinal parasites. He was subsequently appointed Protector of Emigrants in Calcutta, and later, reverting to Military duty, spent his last years of service as Medical Store-keeper in Calcutta.

CAPTAIN GEORGE SELBY BROCK, Indian Medical Service, died at Rawal Pindi on 12th October, 1918, aged 32. He was born on 7th July 1886, the only son of Dr. George Sandison Brock, of Corso d'Italia, Rome, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1910. He entered the I.M.S. as Lieutenant on 28th January, 1911, and was promoted to Captain on 23rd January, 1914. At the beginning of the war he was Medical Officer of the 9th Bhopal Infantry. He had recently been appointed Adjutant of the School of Instruction for Indian Medical Officers of the I.M.S., at Rawal Pindi.

MAJOR JOHN HART McNICOL, R.A.M.C., died on October 1918. He was the son of John McNicol, of Dennistoun, Glasgow, and was educated at Glasgow High School and University, where he graduated as M.B. and Ch.B. in 1909, subsequently filling the posts of House Surgeon of Glasgow Royal Infirmary, and of Assistant to the Professors of Pathology and Materia Medica at that institution. He took a temporary commission as Lieutenant in the R.A.M.C. on 10th October, 1914, was promoted to Captain after a year's service, and subsequently to an Acting Majority. He had twice been mentioned in despatches, received the Military Cross on 3rd July, 1915, and was recently attached to the Suffolk Regiment.

COLONEL G. H. VAN ZYL, of the South African Medical Corps, died of pneumonia on 10th October, 1918, at Wynberg, Cape Province, aged 41. He was Commandant of Maitland Military Hospital.

CAPTAIN LAWRENCE CHARLES CROCKETT, attached R.A.M.C., died on 17th October, 1918, of illness contracted while serving at Malta. He was the son of James H. C. Crockett, of Dallington Lodge, Northampton, and was educated at Charing Cross Hospital, at the Royal Dental Hospital, London, and at Pennsylvania University, and took the L.D.S. of the London Colleges in 1905, and the degree of D.D.S. at Pennsylvania University in 1909. His commission as Captain was dated 20th April, 1917. Before the war he was in practice at Eastbourne.

CAPTAIN JOHN JAMES, R.A.M.C., was reported as killed in action, in the casualty list published on 22nd October, 1918, aged 37. He was born on 24th April, 1881, and educated at King's College, London, where he gained the Warneford Medical Entrance Scholarship, and the Sambrooke Medical Exhibition and second year's scholarship. He took the M.R.C.S. and L.R.C.P. London in 1903, the M.B. London in 1904, and the B.S. in 1906. After acting as Assistant House Surgeon and as Senior House Surgeon at Westminster Hospital, as House Physician of the Seamen's Hospital, Greenwich, and as Resident Medical Officer of Westminster Dispensary, he entered the R.A.M.C. as Lieutenant on 4th February, 1908, and took the De Chaumout prize in Hygiene at the Royal Army Medical College. He was promoted to Captain on 1st August 1911, and was attached to the Highland Light Infantry when killed.

CAPTAIN EVAN LAWRENCE JAMES, R.A.M.C., was reported as killed in action, in the casualty list published on 22nd October, 1918. He was educated at Guy's Hospital, and took the L.M.S.S.A. in 1913. He took a temporary commission as Lieutenant in the R.A.M.C. in April 1916, was promoted to Captain after a year's service, and was attached to the Highland Light Infantry when killed.

CAPTAIN DIGBY BURNS, R.A.M.C., was returned as drowned on service, in the casualty list published on 22nd October, 1918. He took the Irish double qualification in 1912, joined the R.A.M.C. as a temporary Lieutenant in January 1916, and was promoted to Captain after a year's service.

CAPTAIN A. A. PARKER, M.C., Canadian Army Medical Corps, was reported as killed in action, in the casualty list published on 22nd October, 1918. He received the Military Cross on 18th October, 1917.

SUBJECT to His Majesty's approval, the undermentioned to be temporary Lieutenants with effect from the dates specified:—

Saravanamuthu Thambiah, 20th July, 1918; Victor de Rosario, 11th September, 1918; Indubhushan Ghoshal, 12th September, 1918; Jamshed Dossabhoj Gazder, 16th September, 1918; Shankar Vishnu Velankar, 29th September, 1918; Surendra Nath Chatterjee, 6th October, 1918; Phani Mohan Ghosh, 7th October, 1918; Brajendra Nath Pal, 7th October, 1918; Gopal Das Sen, 11th October, 1918; Nani Bhusan Dutt, 17th October, 1918; Amarendranath Basu, 18th October, 1918; and Mulk Raj Sawhney, 18th October, 1918.

SUBJECT to His Majesty's approval and with effect from the 1st October, 1918, Brevet-Colonel Henry Francis Cleveland, C.I.E., V.H.S., is promoted to the rank of Colonel on temporary augmentation of establishment.

Colonel Cleveland's tenure of appointment will reckon from the 25th October, 1918.

SUBJECT to His Majesty's approval and with effect from the 3rd September, 1918, Lieutenant-Colonel John Blackburn Smith, C.B., M.B., is promoted to the rank of Colonel on temporary augmentation of establishment.

Colonel Blackburn's tenure of appointment will reckon from the 20th October, 1918.

THE undermentioned Senior Assistant Surgeons are retained in the service after the age of 55 years, until further orders, and will be borne as supernumerary in their rank and grade, with effect from the dates specified:—

Major Alfred Greenwood, dated 5th September, 1918; Captain Christopher Charles Augustus Wale, dated 20th September, 1918; and Lieutenant Joseph Mathias Nunes, dated 5th September, 1918.

THE services of Captain W. L. Forsyth, M.B., I.M.S., are placed temporarily at the disposal of the Government of Bihar and Orissa, with effect from the 22nd July, 1918.

MAJOR W. D. H. STEVENSON, C.I.E., M.D., I.M.S., is appointed to be additional Assistant Director-General, Indian Medical Service, as a temporary measure, with effect from the date on which he assumes charge of his office.

MAJOR W. TARR, M.D., F.R.C.S., I.M.S., whose services have been replaced at the disposal of this Administration by the Government of India, Army Department, is appointed to be Civil Surgeon, Jubbulpore.

HIS EXCELLENCY THE GOVERNOR OF BOMBAY in Council is pleased to appoint Major R. F. Steel, M.B., B.Ch., I.M.S., to be Superintendent of Mahabaleshwar, *vice* Mr. L. V. M. Robertson, I.C.S., deceased.

WITH reference to Army Department Notification No. 2483, dated the 25th October, 1918, Major F. C. Fraser, I.M.S., will take seniority in his present rank from 1st September, 1918, his previous forfeited service having been restored for good service in the field.

MAJOR (TEMPORARY LIEUTENANT-COLONEL) R. A. NEEDHAM, D.S.O., M.B., I.M.S., Assistant Director-General, Indian Medical Service (Sanitary), is appointed to be Deputy Director-General, Indian Medical Service, with effect from the afternoon of the 24th October, 1918.

THE *London Gazette* (November 18th) notifies the award of the following honours for good work in Mesopotamia:—

To be Officer British Empire.

Major S. R. Christophers, C.I.E., I.M.S.; and Major F. P. Mackie, I.M.S.

For services in East Africa.

Lieutenant-Colonel E. R. Rost, and Major C. E. Southon.

THE services of Major A. F. Hamilton, M.B., F.R.C.S., I.M.S., are replaced at the disposal of the Government of Bombay, with effect from the date on which he was relieved of his military duties.

MAJOR W. D. H. STEVENSON, C.I.E., M.D., I.M.S., Additional Assistant Director-General, Indian Medical Service, is appointed to be Assistant Director-General, Indian Medical (Sanitary) Service, with effect from the 14th November, 1918.

CAPTAIN E. A. PENNY, Indian Medical Service, is granted, subject to His Majesty's approval, the temporary rank of Major while holding the appointment of Deputy Assistant Director of Medical Services, with effect from the 1st November, 1918.

INDIAN MEDICAL DEPARTMENT.

Assistant Surgeon Branch.

Bombay Establishment.

THE following promotions are made, subject to His Majesty's approval:—

Senior Assistant Surgeon and Honorary Lieutenant Joseph Mathias Nunes to be Senior Assistant Surgeon with the honorary rank of Captain;

First-class Assistant Surgeons—

Lionel Scott,
Reginald William Pettigrew,
Frederick Russel Smith,
George Fredrick Andeen, L.A.H. (Dub.).

} *seconded,*

to be Senior Assistant Surgeons with the honorary rank of Lieutenant and to remain *seconded*;

First-class Assistant Surgeon Earnest Ebenezer Thipthorp to be Senior Assistant Surgeon with the honorary rank of Lieutenant;

vice Senior Assistant Surgeon and Honorary Major Albino Graciano Alphonso supernumerary on attaining the age of 55 years, with effect from the 24th August, 1918.

Senior Assistant Surgeon and Honorary Lieutenant George Robert Chamarett, *seconded* to his duties as Assistant Surgeon with the honorary rank of Captain and to remain *seconded*;

Senior Assistant Surgeon and Honorary Lieutenant Louis D'Souza to be Senior Assistant Surgeon with the honorary rank of Captain.

IN Army Department Notification No. 2184, dated the 20th September, 1918, regarding the retirement from the service of Lieutenant-Colonel A. R. S. Anderson, M.B., I.M.S., Bengal for "1st August, 1918," read "11th September, 1918."

IN accordance with Rule 4 of the Regulations of the Central Provinces Medical Examination Board, the Chief Commissioner is pleased to appoint Major W. Tarr, M.D. (Edin.), F.R.C.S. (Edin.), I.M.S., Civil Surgn., Jubbulpore, to be a Member of the Board, with effect from the 8th October, 1918, for the unexpired portion of the term of three years, *vice* Lieutenant-Colonel W. H. Kenrick, L.R.C.P. (Lond.), M.R.C.S. (Eng.), D.T.M. (Liver.), I.M.S., Civil Surgeon, Jubbulpore, placed temporarily at the disposal of the Government of India, Army Department, for military duty.

LIEUTENANT-COLONEL A. W. R. COCHRANE, M.B., F.R.C.S., I.M.S., is appointed to be Professor of Medicine, King George's Medical College, Lucknow, substantively *pro tem.*, with effect from the date on which he took over charge of his duties, until further orders.

THE services of Lieutenant-Colonel W. B. Lane, C.I.E., I.M.S., Inspector-General of Prisons, Central Provinces, are placed permanently at the disposal of the Government of India, Army Department.

Colonel Lane, who has now been promoted to the rank of Colonel, has been for many years past Inspector-General of Prisons in the Central Provinces. His promotion will make a vacancy in that office. Indeed prospects in the jail department are good for promotion. Lieutenant-Colonel Henderson, of the United Provinces, and Sir Walter Buchanan, of Bengal, are both over age and due soon to go.

COLONEL JOHN CRIMMIN, V.C., C.B., C.I.E., V.D., K.H.P., is retained in the service, with effect from the 27th October, 1918, and will be borne as supernumerary in his rank and grade.

SUBJECT to His Majesty's approval and with effect from the 12th October, 1918, Lieutenant-Colonel Thomas Stodart, M.B., is promoted to the rank of Colonel on temporary augmentation of establishment.

Colonel Stodart's tenure of appointment will reckon from the 12th October, 1918.

Colonel Stodart entered the Madras Medical Service, on 29th July, 1893, and becomes full Colonel after 25 years' service. Promotion at his age, 50 years, is worth having.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements, and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to "*The Indian Medical Gazette*," Rs. 14, including postage, in India. Rs. 16, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED:—

Hughes and Bank's War Surgery. Price 30s. Baillière, Tindall, & Cox.

Calcutta Health Report.

Madras Medical Council Report.

Stewart's Physiology. Baillière, Tindall, & Cox.

M. D. Palmer's Lectures on Marriage. Fifth Edition.

Baillière, Tindall, & Cox.

Sanitary Report, Bengal.

Sanitary Report, Assam.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM:—

Colonel W. E. Jennings, I.M.S., Poona; Sir Leonard Rogers, Calcutta; Capt. D. J. Harris, R.A.M.C., Poona; Major C. H. Brodrick, I.M.S., Secunderabad; Lt.-Col. D. G. Crawford, I.M.S., Madras; Major A. E. Lister, I.M.S., Lucknow; Dr. Wouters, Colombo; Lt.-Col. C. C. Barry, I.M.S., Rangoon; Major Austin, R.A.M.C., Calcutta.

FEB., 1919.]

Original Articles.

CHARAKA SAMHITA.

BY W. D. SUTHERLAND, M.D.,

LT.-COL., I.M.S.,

Imperial Serologist.

[*Charaka Samhita*.—Translated into English. Published by Avinash Chandra Kaviratna, Calcutta.]

Part I, n.d. Part II, 1892.

UNFORTUNATELY the copy of this work at our disposal lacks some pages, but enough remain to show that Charaka's revision of the Treatise of Agnivesa has many of the merits and not a few of the defects of the monumental work of Susruta. The main plan of the work is the setting forth of aphorisms. Some of these are hard to understand in these latter days, despite the assiduous labours of the commentators and the learned translator. In the *Sutrasthāna* (p. 6), we read that:—

The object of the tongue is taste. Water and earth are the objective existences in which taste inheres. In its manifestations and as regards particular kinds of it, space, air and light, are also its adjuncts.

This subject is elaborated in the lesson *Atreya-Bhadrakāpya*, where it is written that:—

The taste that is sweet, in consequence of its being well-adapted to the body, increases the juices, blood, flesh, fat, bones, marrow, *ojas* and vital seed. It contributes to the health and cheerfulness of the six senses (*viz.*, the five organs and the mind). It improves strength and complexion. It destroys (excited) bile, poisons and (excited) wind. It is beneficial to the skin, the hair and the voice. It contributes to cheerfulness in general. It prolongs life, is sedative and nutritive, oilifies the system (by destroying its dryness), makes the system consistent, promotes the strength of weakened parts and unites fractured limbs. It contributes to the strength and cheerfulness of the organ of scent, mouth, throat, lips and palate. It alleviates burning sensation (of the skin) and swoons. It is exceedingly liked by bees and ants. It is oily, cool and heavy.

The sour taste adds relish to food; excites the digestive fire; gives nutrition to the body; weakens objects by entering into them; enlivens the mind; invigorates the senses; increases the strength; makes the wind flow in its natural course; cools and gratifies the heart; causes the mouth to be filled with saliva; assists at deglutition; generates impurities in the body; and contributes to general cheerfulness. It is light, warm and oily. (p. 310.)

The saline taste digests (the bad humours), generates impurities, promotes the appetite, expels stools, cuts away and removes by force (adherent phlegm and other humours) and purges the intestines after making the stools watery. It is keen, and operates as a purgative. It cuts away and removes. It expels undigested food from the intestines. It scoops and hollows parts that are solid. It destroys the (excited) wind. It allays and destroys rigidity of the limbs or the whole body. It removes the sensation which one feels at times of this or that limb being bound with cold or heat. It softens things congealed and hardened. It overwhelms

all other tastes. It causes saliva and other matters to appear in the mouth. It melts or liquefies thickened phlegm. It cleanses all ducts. It softens all the limbs of the body. It adds relish to food. It is well suited to be mixed with food. It is heavy, oily and warm, but not excessively so. (pp. 310, 311.)

The pungent taste corrects (the dulness of) the mouth; provokes the digestive fire; dries up the food that has been eaten; causes nasal discharges; purges the eye; clears all the senses; alleviates and destroys tympanites; swellings or intumescences; plethoric growth of the body, urticaria, ophthalmia, oiliness, sweat, impure secretions and all kinds of impurities. It adds relish to all kinds of food. It alleviates and cures itching of the skin. It destroys all kinds of eruptions. It destroys worms and parasites. It furrows the flesh. It liquefies congealed or coagulated blood. It separates or disjoins such elements of the body as coagulate or unite with one another. It cleanses and widens all ducts. It is light, warm and dry. (p. 312.)

The bitter taste is so disagreeable as to produce a disgust for itself, but nevertheless it cures disgust for food. It destroys the action of poisons. It is anthelmintic. It alleviates swoons, burning sensation of the skin, itching, leprosy and thirst. It causes the skin and the flesh to become tough. It is destructive of fevers. It promotes or sharpens the appetite. It assists the digestion of undigested food. It improves the qualities of the milk in the breast. It removes bad humours and altered constituents of the body by thinning them gradually and thus clearing the system of them. It dries up phlegmonous secretions, fat, serum (or marrow of the flesh), marrow of the bones, saliva, pus, sweat, urine, stools, bile and phlegm. Its attributes are dry, cool and light. (p. 313.)

The astringent taste restores harmony among the faults. It restrains (the stools, urine and other secretions). It draws in and contracts the limbs of the body. It causes sores and parts eaten away to heal or fill up. It dries up the fluids of the body. It retains or restrains all secretions. It alleviates phlegm and hæmorrhages caused by excitement of the bile. It sucks up all the phlegmonous and other secretions of the system. It is dry, cool and heavy. Although possessed of these qualities, yet, if taken exclusively and in copious measure, it makes the mouth dry. It produces pain in the heart (by contracting it). It causes abdominal flatulence. It restrains the free utterance of speech. It produces darkness of complexion. It obstructs the ducts of the system. It destroys virility. Restraining the secretions (constipating them) it brings about untimely decrepitude. It restrains the wind, urine and stools. It produces emaciation. It brings about heaviness and pain in the body. It produces thirst. It retains fluid and secretions and prevents them from flowing or escaping out of the body. In consequence of its being rough, clear and dry, it brings about hemiplegia, paralysis, spasmodic contractions, facial paralysis and other diseases of the kind that spring from excited wind. (pp. 314, 315.)

And full directions are given for the differentiation of the various tastes:—

An object having a sweet taste, when placed in the mouth, oilifies it (*i.e.*, dispels all sensation of dryness), produces pleasure and joy, and also a sensation of softness. By these is sweetness ascertained. Besides, the whole mouth seems to be filled with it and a sensation of adhesion results from it. From tenderness of the teeth, the appearance of saliva or perspiration (on the body), awakening of the mouth, and a burning sensation of both the mouth and the throat, as soon as the object is placed in the mouth, one should say that its taste is sour. That object which, when placed in the mouth,

produces a temporary sensation of pleasure and causing the appearance of saliva and other secretions from the glands of the mouth, fills it with a sensation of softness and soon after with a sensation of burning, should be known as saline in taste. That object which as soon as it is brought into contact with the tongue, produces a sense of pain and pinches it and, causing also a sensation of burning, leads to a discharge of secretions from the mouth, nose and eyes, is said to be pungent. That object which, on coming into contact with the tongue, pains it much and destroys its relish, and which, producing the sensation of dryness and the reverse of sliminess, makes us cheerless, should be known as bitter. That object, which brings upon the tongue a sensation that is very reverse of sliminess, as also of contraction and rigidity and which seems to contract the throat also and stretch the heart, is known as possessing the astringent taste. (pp. 321, 322.)

And in a footnote on p. 298 we read :—

The *prākṛiti* or original source of the tastes is water. Water, however, is apparently tasteless. How then can the six tastes be said to belong to it or as existing in it? The *Rishi* explains that the tastes do exist in their *prākṛiti* or water, but that existence is unmanifest. This, as Chakrapani points out, implies that whatever the taste one feels when water is brought in contact with the tongue, that taste is really nothing else than sweet, sour, etc., in an unmanifest state. Similarly, when the tastes exist in a combined state with particular ones predominating, the others must be held to be existing in an unmanifest state. In objects also in which the tastes exist in a combined state with particular ones predominating, the subordinate ones must be taken as occurring in an unmanifest state.

The deep philosophy of all this is manifest.

The shrewdness of the following aphorisms regarding physicians is apparent :—

Physicians are of three kinds: hypocrites or quacks dressed as physicians form one class; physicians by common report form the second class; and physicians that really possess the accomplishments which such men should possess, form the third class. These are the three classes of physicians that practise on earth. Those ignorant persons, who having equipped themselves with the utensils, the medicines, the books and the bracelets of physicians and assumed their manners and conduct, acquire the title of physicians, are said to be hypocrites or quacks in the guise of physicians.

Those persons who, without really possessing them, pretend to prosperity, fame, knowledge and success such as true physicians have, and acquire the title of physicians, are said to be physicians by report. The true accomplishments of a physician are said to reside in those persons that have a practical knowledge of the application of drugs, and acquaintance with the medical scriptures and the affairs of men, that are celebrated for their success in treatment, that contribute to the real happiness of their patients, and that are restorers of life and strength. (pp. 129, 130.)

Physicians happen to be of two classes, O Agnivesa: One class consists of those that follow (save) the life-breaths by destroying diseases; the other class consists of those that follow diseases and destroy life. (p. 403). The right-minded reader will eagerly turn to the description—too long to quote here—of these two classes.

For extending the knowledge of (medical) science, physicians, without having recourse to arrogance, should never tolerate such disputants as are of small calibre, ignorant, and characterised by boastful twaddle. (p. 441.)

And the passage :

These persons, who are endued with great compassion for all creatures, and who in consequence of a knowledge of the truth have become filled with illimitable mercy, feel disposed to put down wrong expositions of science. Those men who have adopted the side of error, or who postpone answers to enquiries by alleging their inopportune-ness or their own illness (such as headache and the rest) or who are boastful and insolent in speech, and disposed to speak ill of others, never succeed in obtaining a mastery of their science. One should avoid that man who speaks disrespectfully of the (medical) scriptures even as one should avoid the net which time throws for enmeshing living creatures. (*Ibid.*)

gains strength from the luminous exposition of the translator :

The object of this verse is to show that the desire to put down wrong expositions of science, instead of implying any cruelty, really proceeds from illimitable mercy to all creatures. As a matter of fact, mercy or consideration shown to quacks and wrong-headed practitioners is really tantamount to cruelty or indifference to all living creatures. (*Ibid.*)

There is no end (to reach) of medical science. Hence, heedfully, thou shouldst devote thyself to it. In this connection, one should conduct oneself in this way. Then, again, skilfulness of practice should be acquired from others, without feeling any humiliation. (p. 556.)

To those who profess to believe that there was little knowledge in the old days of how to state one's case and vanquish an opponent in public, we would recommend the study of the following passages :—

Disputation should never be entered into (with an opponent) in an assembly that is committed to one side, whether the assembly consists of members possessed of knowledge and wisdom and eloquence as regards statements and reply, or of members that are ignorant. In an assembly of the ignorant, if the members happen to be friends or if they are indifferent, one may, even if not possessed of knowledge and wisdom and eloquence, enter into a disputation with a person who is of blazing fame but who happens to be an object of aversion with all respectable men. While arguing with such person, one may flourish wordy bolts consisting of crooked and long aphorisms. Frequently indulging in ridicule, assuming the while great satisfaction of countenance, and turning towards the auditory and expressing the while by signs that it is the highest court of appeal, one should not give one's opponent an opportunity of speaking, even when the latter is very much desirous of speech. If the opponent utters any word that is obsolete, he should be immediately told that such a word is never used (by the wise). Or, one may tell one's opponent that his proposition has not been at all established. If the opponent summons one again, one should tell him, "Go and study for a full year sitting at the feet of your preceptor (and then come for disputing)." (p. 561.)

In this connection, the following are certainly the means that may be adopted for quickly discomfiting disputants that are inferior. They are these: An opponent that is weak in the Scriptures should be vanquished with citations of lengthy aphorisms. An opponent that is bereft of wisdom should be vanquished by the use of phrases fraught with words whose sense is difficult to catch. An opponent that is unable to quickly catch the sense of the words he hears, should be vanquished by reciting lengthy aphorisms

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fraught with crooked words. An opponent that is wanting in reproductive faculty should be vanquished by using diverse kinds of words, as also words each of which has diverse senses. An opponent that is bereft of clear and eloquent utterances should be vanquished by jeering imitations of his half-uttered words and expressions. An opponent that is vain though not possessed of skill and mastery over the science should be vanquished by one's putting him to shame (by exposure of his ignorance). An opponent that is wrathful should be vanquished by provoking his wrath. An opponent that is timid should be vanquished by exciting his fear. An opponent that is heedless should be vanquished by adherence to method. (pp. 562, 563.)

I. The use of *oils* is described on pp. 143, 144:

The following persons should drink oil, and drink it in the cold season:—

They whose phlegm has been excited and who have abundance of fat; they whose necks and abdomens are lax and large; they that are afflicted with diseases of the wind; they in whose constitutions the wind predominates; they who desire strength of body, or its leanness, or lightness, or hardness, or durability of limbs, or coolness and softness and thinness of the skin; they that have worms in their stomachs; they that labour under constipation of bowels; and they that have sores in their intestines. Amongst those for whom oily substances should be prescribed the following are the persons that should drink fat:—

They that are constantly exposed to the wind and the sun; they whose constitutions are dry; they who have been reduced by bearing heavy burthens or by excessive walking; they whose vital seed or blood has been dried up; they whose phlegm and fat have been reduced; they whose bones, joints, nerves, sinews, vitals, and stomach have much pain; they whose ducts and other hollow parts of the body are filled with strong wind; they that are habituated to the drinking of fat. Amongst those that deserve the administration of oily substances the following are those that should drink marrow:—

They that have a strong digestive fire; they that are constantly exposed to the drain of exertion and labour; they that are capable of eating much; they that are inured to the administration of oily substances; they that labour under disorders of the wind; and they that have constipated bowels.

II. The *Sweating-house* and its use are fully detailed:—

Before introducing the patient into the chamber, he should be addressed in these words:—O amiable one, do thou enter this chamber for thy good and for being cured of thy ailments. Having entered the chamber lie down at thy ease on thy right or left side upon the ridge running all round the floor. Thou shouldst not leave the ridge however copiously thou mayst perspire and near thou mayest feel to the point of losing thy consciousness. In fact, thou must adhere to the ridge as long as thou art not deprived of breath, that is till thou feelest thyself to be on the point of death itself. If thou leavest the ridge for coming to the door of the room (from desire of escaping from it) thou shalt then, in consequence of thy copious perspiration and the reeling state of thy senses, immediately meet with death. Thou shalt not therefore on any account leave the ridge. When thou shalt feel that all thy impurities have passed out of the body, that thy perspiration has been copious, that all the pores of the body have secreted thy impurities, that thy body has become light, that all stiffness of limbs has been removed, that all rigidity has left thee, that thou hast been freed from

pain and heaviness, thou shalt then leave the ridge and come to the door. (p. 162.)

III. *Headache* and its causes are fully described:—

From loud talking and excessive talking, powerful scents, night-keeping, exposure to cold, physical exercise, suppression of the urgings of nature, fasting, violence done to the body, purging and vomiting in excess, from tears and grief and fear and alarm, from carrying of heavy loads, and walking of long distances, the wind that is in the head increases and entering the veins of the head becomes excited. From the wind (thus excited) one gets a severe headache. (p. 186.)

IV. The *influence of sex in inflammation* appears from the passage:—

That inflammation, which, in the case of a male person, setting in from the feet, gradually extends over the whole body upwards, or which, in the case of a female, setting in from the mouth, gradually extends over the whole body downwards, is regarded as not easy of cure. (p. 206.)

V. Perhaps the disease now known as *Vincent's angina* may have been in the mind of the Sage when he wrote:—

When the wind, bile, phlegm, of any person all become excited together and stay at the root of a person's tongue, and cause him burning pain by reaching the acme of aggravation or excitement, they then generate a violent inflammation, with pains of diverse kind. The disease, which rapidly reaches a crisis, should be included in the class called Rohinika. Such a person can expect to live for three days only at the most. If treated, however, by a skilful physician he very soon becomes cured. (p. 208.)

VI. The controversy as to *wind, bile, and phlegm* did not exist in Charaka's time, for we read:—

The hypogastric or pubic region, the place where the faeces collect, the regions about the loins, the thighs, the feet and the bones are the seats of wind. That portion of the stomach, however, where digestion goes on, among the seats of wind, is in particular the seat thereof. Sweat, the thorax, saliva, blood, and that portion of the stomach where the undigested food remains, are the seats of bile. Amongst these all, the last is especially the seat of bile. The thorax, the head, the throat, all the joints, that portion of the stomach which holds the undigested food and the fat are the seats of phlegm (p. 221).

But the translator very feelingly remarks, in the footnote on page 232, that (*the italics are ours*):—

Wind, bile and the phlegm are the three things that should be carefully understood before Charaka's system can be understood. Each Science must have its technical terms. In the selection of technical terms, however, care should be taken to avoid words which in common use have other meanings. Unfortunately, the framers of the Hindu system of medicine did not take this care. The three words they chose had and have other acceptations. Hence, the terms they employed have been very much misunderstood. Wind is not the atmosphere, bile is not the secretion of the liver that helps digestion, and phlegm is not the secretions that persons afflicted with cold throw out. They are, on the other hand, technical terms that imply certain states of the physical constitutions. Certain operations in healthy and

unhealthy bodies are attributed to the agency of certain forces in their normal and abnormal states. *The belief in the existence of these forces is no more unscientific, than the belief in gravitation as a force residing in solid bodies. Gravitation, apart from the fact of falling down of solid bodies, is no longer believed. Yet there is a convenience in speaking of gravitation as a force: after the same manner, certain groups of physical phenomena are ascribed to the existence of certain forces called wind, bile and phlegm. As forces, one may not know anything more of them than the phenomena they display. Yet in conceiving their existence there can be no error in inconvenience. To say that the Hindu system of medicine is unscientific in consequence of its reliance on this trinity of causes with respect to both health and disease, can proceed only from a misapprehension of the true import of the terms employed.*

VII. The burden of corpulence is described:—

In consequence of the fat, which predominates in the corpulent man, existing in contact with phlegm and, therefore, of its attribute of emitting secretions, and lastly, in consequence of the corpulent man's inability to bear or go through physical exercises of any kind, there is excess of perspiration in him. In consequence of his digestive fire being very strong and of there being excess of wind in the bowels (and every other viscus), there is excess of hunger in him, as also excess of thirst. In consequence of the ducts being all covered with fat, the wind, in special, wandering through the bowels, stirs up the digestive fire, and causing it to burn fiercely consumes whatever food is taken. For this reason the corpulent man very speedily digests the food he takes, and desires to take food at very short intervals. If delay occurs in giving him food when he feels hungry, diverse diseases occur. These two, in especial, *viz*, fire and the wind, cause diverse afflictions (in his system). These two consume the corpulent man, even as a forest-conflagration consumes a forest. (p. 234.)

The important subject *diet*, to which Ayurveda gives so much prominence, is fully dealt with; we cull only these passages:—

Among all kinds of pecking fowls, the fat of the cock is the best. Among all animals that feed on twigs and leaves, the fat of the goat is the best. Among roots, ginger is the best. Among fruits, *Uva passa* are the best. Among all the products of the sugarcane, sugar is the best. (p. 274.)

Among waters, the worst is that of rivers in the seasons of rains. Among salts, the worst is brackish earth. Among potherbs, the worst is the mustard seed plant. Among meat, the worst is beef. Among birds, the meat of the black pigeon is the worst. Among animals living in holes, the flesh of the frog is the worst. Among fishes, the worst is Chilchima. Among ghees, that from sheep's milk is the worst. Among milk that from sheep is worst. Among vegetable oils, that from Kusumbha is the worst. Among animals in marshy regions, the fat of the buffalo is the worst. Among animals of the piscatorial genus, the fat of the crocodile is the worst. Among aquatic fowl, the fat of the Kakamadgu is the worst. (pp. 274, 275.)

Food is the foremost of all articles that support life. Of all articles that are assuring, water is the foremost. Of all articles that dispel fatigue or exhaustion, the best is wine. Of all articles that prolong life, milk is the best. Of all articles that promote nutrition and lead to increase of flesh, the best is meat. Of all articles that are soothing, the best is juice. Of all articles that promote relish of food, the best is salt. Of all articles that are agreeable to the taste, the best are those that have a sour taste. Of all things that promote strength, the

best is the flesh of the cock (or hen). Of all things that increase the semen, the best is the vital seed of the alligator. Of all things that allay phlegm and bile, the best is honey. Of all things that allay wind and bile the best is ghee. Of all things that allay wind and phlegm, the best is oil. Of all things that are destructive of phlegm, the best is vomiting (induced by emetics). Of all things that are destructive of bile, purging is the best. Of all things that are destructive of wind, the best are enemata. Of all things that soften the body, the best are the operations called Swedana (*i.e.*, those that induce perspiration). Of all things that make the body firm, the best is physical exercise. Of all things that reduce corpulency, the best is sexual intercourse. (pp. 276, 277).

VIII. *Liquorice* is credited with many virtues:—

The foremost of all articles that are used for strengthening vision, increasing the semen and hair, improving the voice and complexion, purifying the blood, healing sores and killing worms. (p. 283.)

The aphorism "A dry and arid province is the foremost of all sanitarium" might be applied to the Karoo; while that to the effect that "A marshy tract is the foremost of all unhealthy places" leads one to suspect that the Sage would have been highly pleased to know more about the *anopheline* than appears from his treatise.

IX. *The smoking of certain drugs* is held to be of great efficacy in the following conditions:—

Heaviness of the limbs, headache, inflammation of the schneiderian membrane (with loss of sense of smell), hemicrania, otalgia, ophthalmalgia, cough, hiccup, asthma, hoarseness (of voice), weakness of the teeth, otorrhœa, discharge from the nose, discharge from the eyes, ozœna, foetid smell in the mouth, odontalgia, anorexia, lock-jaw, stiff-neck, itching, worms, paleness of the face, mucous discharges, discordance of voice, enlarged tonsil, inflammation of the ranula, morbid baldness, reddish yellowness of the hair, falling of the hair, sneezing, sleepiness, dulness of the understanding, long sleep or coma: all these are relieved by inhalation of the smoke (of the preparations already mentioned). Such smoke also enhances the strength of the hair, the forehead, the senses, and the voice. (p. 55.)

The preparation of the material to be smoked, the pipe, and the manner of smoking are carefully described:—

One for whom smoke is not forbidden should take it by the nose in disorders having their seat in the head, nose and the eye. When the disorder is in the throat, one should smoke by the mouth. One who smokes by the nose should let it out by the mouth. One inhaling puffs of smoke by the mouth should never let them out by the nose for such smoke, by getting upwards, is sure to injure the eyes. The man of prudence, while inhaling smoke by the nose, should do so three times, having shut one of the nostrils, seated at his ease, and having disposed his body and eyes straight, and with mind concentrated on the act. The pipe for inhaling smoke for purging should be of the length of one's own four and twenty fingers' breadth; that for inhaling oily smoke should be of the length of two and thirty fingers' breadth; and that for daily smoke should be of the length of six and thirty fingers' breadth. The pipe should consist of three straight limbs. The hollow of the first limb should be of the measure of the seed of a jujube. In the construction of a smoking pipe the use

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is applauded of materials employed in constructing enema pipes. Smoke, that is emitted from a distance, divided in its course by three limbs attenuated by the peculiar shape of the pipe, and inhaled in proper quantity and at the proper time, does not injure the organs. (pp. 57, 58.)

The contraindications are also fully detailed :—

One who has taken purgative should not take smoke; nor one who has taken an injection; nor one who is suffering under affections that produce hemorrhage; nor one suffering from poisoning; nor one afflicted with grief; nor a woman that is pregnant; nor one exhausted with labour; nor one under intoxication; nor one whose stomach is full of mucus; nor one who is suffering under excess of bile; nor one whose eyes are not visited by sleep; nor one subject to fainting fits or vertigo or afflicted by thirst; nor one who is weak; nor one who has wounds and ulcers on the body; nor one who has taken wine or milk or oily drinks or honey. One should never take smoke after having eaten rice with curds. Then again, one should not smoke whose constitution is dry, as also one who is angry. One should not smoke who is suffering under an inflammation of the palate; nor one who is suffering under cataract; nor one who has got inflammation of the throat; nor one whose head has sustained an injury; nor one who is suffering under disorders of urine; nor one who is suffering under pain with heat and swelling in the temples and forehead; nor one who afflicted with disorders resulting from excess of drinking. (p. 57.)

X. It is a pity that the description of the advantages of the use of an *umbrella* does not admit of exact translation :—

The use of an umbrella dispels all fear from the dangers and misfortunes included in the called *Iti*, conduces to strength, affords protection (against evil spirits and Rakshasas), serves as a covering for the head, is auspicious, and protects one from the sun, wind, dust and rain. (p. 64.)

but the translator, in a footnote, remarks :—

The commentator explains that *Iti* means *Ragadidurdaivam*, i.e., misfortunes like wrath, etc. It is difficult to understand what is exactly meant by the word. The six well-known dangers, of course, that are sometimes implied by the word cannot be meant here.

XI. We all know that *suppression of the natural urgings of the body* entails serious consequences sometimes, but these have seldom been so minutely described as by Charaka, who gives clear directions for their treatment :—

Bending of the body, convulsions, contractions (of muscles), loss of the sense of touch, acute sensation of cold, and paralysis agitans, arise from suppressing tendencies to yawn. All those remedies that are laid down for destroying disorders of the wind are beneficial in these.

By suppressing tears, catarrh in the nose, eye-diseases, heart-disease, loss of appetite, and delirium are induced. In these disorders, sleep, wines, and agreeable conversation are the remedies prescribed.

Abdominal tumours, heart-disease, loss of consciousness and faintness are born of suppression of breath. In these, rest and all kinds of treatment that are destructive of disorders of the wind, are beneficial. (p. 76.)

XII. The excellent effects of *physical exercise* are noted :—

The consequences resulting from physical exercise are lightness of body, capacity for work, collectedness, power of enduring hardship, removal of all imperfections, and augmentation of the digestive fire. (p. 77.)

To this passage the translator complacently appends a footnote :—

It is a fact that by particular exercises particular limbs may be made to look handsome after the removal of their imperfections. This has been lately known in the West.

XIII. In order to *preserve health and subjugate the senses*, the following directions should be followed :—

One should worship the deities, kine, Brahmanas, seniors, aged men, persons crowned with (ascetic) success and preceptors. One should tend one's sacrificial fires. One should bear on one's person efficacious herbs. One should bathe twice in the day once in the morning and once in the evening. One should always keep one's outlets for the passage of impurities, viz., urine and excreta, and one's feet, perfectly clean and well washed. Within a fortnight one should have three shaves and thrice pare one's nails. One should every day wear clean and well-washed clothes. One should be always cheerful, and always use agreeable perfumes. One should wear handsome and decent garments, and dress one's hair (by combing and parting it). One should every day apply oil to one's head, ears, nose and feet. One should inhale smoke (under the restrictions and in the way indicated before). One should welcome a person one meets (without waiting to be spoken to). One should speak agreeable words with smiles. (pp. 90, 91.)

One should use umbrellas, sticks, turbans, and shoes. One should be observant of all auspicious acts. One should avoid such spots as are strewn with filthy rags and bones, and horns, as are unholy (such as cemeteries and crematoriums), and such as are also strewn with hair, chaff, sweepings and rubbish, and ashes, and skulls, and flowers that have been used in worship. One should not indulge in physical exercise when one is tired. One should constitute oneself the friend of all creatures. (p. 91.)

to which the footnote runs :—

"The Commentator points out that a physician should not, therefore, refuse to treat a person who has incurred the animosity of the king or one who has become fallen through sin."

One should not ride vicious animals. One should not sit upon a hard seat of the height of one's knee. One should not sleep on a bed that has not been properly stretched, that is without pillows, that is not spacious, and that is not smooth and level. One should not wander or walk over the uneven summits of mountains. One should not climb trees. One should not plunge into a rapid stream. One should not enjoy the shade of a jujube tree. One should not walk about in the vicinity of a place where a fire has broken out. One should not laugh aloud. One should not pass wind loudly. One should not yawn, or sneeze, or laugh without covering one's face. One should not strike bone against bone. One should not scratch one's nails. One should not scratch or rub one's nose. One should not grind one's teeth. One should not scratch the soil. (pp. 92, 93.)

On this the translator remarks :—

"This is an ugly habit with many persons. Sitting as people do, in India on uncarpeted

floors, many men, while talking, scratch the floor with little sticks or pointed pebbles."

One should not spit, or make water, or answer the other call of nature with face turned towards the blowing wind, a blazing fire, a piece of water, or the moon, or the sun or a person of the regenerate class, or one's preceptor. One should not commit nuisance on a road or street. One should not eject the phlegm or mucus of one's nose amid a place that is crowded, or when one is engaged in eating, or when one is employed in reciting one's prayers, or in performing the Homa or in reading with one's preceptor, or in dedicating offerings to the deities or when one is doing any auspicious or religious act. (p. 97.)

XIV. As the begetting of male offspring is the prime duty of a Hindu much attention is paid to the time and place of *coitus*.—

Under the shade of a Chaitya tree, or on a ground intended for a sacrifice, or on a spot where four roads meet, or in grove, or in a crematorium, or on a sacrificial altar, or in a tank, lake, or other water, or in a spot where sacred or medicinal plants and herbs grow, or in the house of a regenerate person or in that of one's preceptor, or in that of a deity. One should not have sexual congress at dawn or in the evening, or on such days of the moon as have been declared (in the scriptures) to be unfit for such acts, or when one is impure, or when one has not taken a provocative tonic or other medicine, or when one is anxious in consequence of one's not having accomplished what is in one's heart, or when one's heart is not cheerful, or when one is hungry (for not having taken any food), or when one has overloaded one's stomach, or when one has not a level bed to lie upon, or when one is afflicted by the urgings of urine or fæces or when one is spent by toil, exercise, fast, and exhaustion.

XV. Of *Insanity* we read :—

That person whose speech becomes indistinct, copious in measure, and quick (in respect of utterance), and whose efforts or exertions become inconstant and unsteady, and whose appearance becomes dry and brown-red, should be taken as afflicted by insanity due to the action of the (excited) wind. That person who becomes wrathful, who indulges in harsh speech, who becomes disposed to strike others and fond of quarrel, and whose appearance becomes red or yellow or white, should be known as afflicted by insanity due to the action of the (excited) bile. That person who indulges in speech that is partially disconnected, who becomes possessed by drowsiness and inactivity, whose appearance becomes pale, and who becomes always meditative, should be known as afflicted by insanity due to the action of the (excited) phlegm. (pp. 261, 262.)

That the cause of insanity may be supernatural is clear from the remarks quoted here :—

The deities generate insanity by directing their gaze (to the persons with whom they are offended). Seniors, and persons of advanced age, and Siddhas, and Rishis cause it by denouncing curse. The Pitris bring it about by forcible assaults. The Gandharvas do it by touch. The Yakshas do it by entering into the bodies of the persons. The Rakshas bring about insanity by causing the persons to inhale their scent. The Pisachas, again, bring about this disease by riding on the heads of the persons and using them as convenient beasts. (p. 995.)

XVI. We learn how to diagnose the vital principle affected *when a person swoons* from the following passage :—

In swoons due to the action of the (excited) wind, the patient while beholding empty space of the color of blue, or dark, or red, becomes suddenly deprived of consciousness and soon regains it and discovers the symptoms of tremour, pain in all the limbs, agitation of heart, gradual emaciation of the body, and brownness or redness of complexion. In swoons due to the action of the (excited) bile, the patient, while beholding empty space of the color of red or green or yellow, suddenly loses consciousness and awakens to sense with the whole body covered with perspiration and with thirst, burning sensation, and eyes either red or yellow and indicative of agitation, and with loose and watery motions, and a complexion that becomes yellow. In swoons due to the action of the (excited) phlegm, the patient while beholding empty space of the color of clouds or as if it were enveloped with partial darkness, becomes suddenly deprived of consciousness, and regains it after some time and feels as if all his limbs are wrapped round with a heavy cloth or a wet skin, with watery discharges coming out of his mouth and nose, and with hiccup. (pp. 262, 263.)

XVII. That the Sage had clearly defined ideas of the merits of various articles of diet is shown by the following remarks, on pp. 342, 343 :—

The flesh of the porcupine is sweet-sour. On assimilation it has been said to be pungent. It is destructive of wind and bile, and alleviates consumption and asthma.

The Rohita fish, in consequence of its feeding on moss and of its never sleeping, increases the digestive fire. It is digested soon, and greatly enhances strength.

The tortoise is said to be a tonic. It alleviates the wind. It increases semen, improves the vision, and increases the strength. It improves both intelligence and memory. It is a good regimen for the weak stomach. It cures consumption.

His ideas of the properties of *grapes* seem to require modification in the light of modern reasearch :—

Mridvika alleviates thirst, burning sensation of the skin, fever, asthma, hæmorrhages caused by excitement of the bile sores and wounds, phthisis, excitement of the wind and bile, epistaxis or suppression of urine, harshness of voice, delirium tremens, bitterness of the mouth, dryness of the mouth, and consumption. It promotes nutrition and increases corpulency: it enhances the vital seed. It is sweet in taste, oily, and cooling. (p. 353.)

XVIII. That the art of healing should be practised with circumspection in the interests of the practitioner, and why, appears from the following, to which the translator has appended a striking footnote, on p. 491 :—

Of diseased persons of the following kinds, even when the fit time comes, a draining out of faults, or administration of any other medicine, should not be attempted. They are: (1) one that is not disposed to remove the cause of censures directed to oneself; (2) one that is very poor; (3) one that has no attendants (nurses) to look after him; (4) one that is full of pretensions regarding his own skill as a physician; (5) one that is of hard temper; (6) one that is envious of other people; (7) one that is exceedingly weak in strength, flesh, and blood; (8) one that is exceedingly addicted

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to unrighteous acts; (9) one that is suffering from an incurable disease; and (10) one in whom the symptoms of the near approach of death have discovered themselves. By treating patient of any of these kinds, the physician incurs both sin and infamy.

The footnote runs :—

The reasons, from a Hindu point of view, for not treating these kinds of men, are all cogent. As regards those men that are undisposed to provide against the evil opinions entertained of them by others, it should be said that they are wedded to their vices; for it is by leaving off their vices that they can silence the calumnies of friends and foes. A confirmed sinner like such a person should not be treated. A wholesome dread of public opinion characterises every good man. The objection to treat one that is very poor is based on his inability to conform to the instructions of the physician. Such a man cannot have a room like to what the physician would advise him, he cannot have beds and clothes and diet, etc., of the kind prescribed. Hence treatment in this case can never be effectual. Then again, the Hindu Scriptures regard a poor man as suffering misery only in consequence of the sins of a past life. Such a man is a great sinner. Poverty is the result of sin. Even Manu says that poor should be driven off the place where sacrifices are performed or offerings made to the deities and the Pitris. In another place Manu says:—The poor, the blind, the deaf, should not be given any portion of the offerings made at Sraddhas. Their death would be a relief to them. The world does not lose anything by the disappearance of poor men from it. It should, however, be remembered that these injunctions with regard to the poor do not apply to Brahmanas. With the latter, poverty is a merit, for it is adopted from choice. To the credit of the Hindu Scriptures it should be said that there are other places where injunctions occur about giving to the poor

It is, of course, clear why a patient on the point of death should not be treated. Such treatment may raise false hopes among the relative and induce them to spend largely. Besides, as death is certain, the physician loses his reputation by undertaking to ward it off.

XIX. Things being as above described, *prognostics* was naturally a matter of great moment.—

The physician should not take up that man for treatment who has got dropsical swelling on his feet, whose calves have lost all compactness, and whose thighs have become exceedingly weak. That man should not be treated with medicines whose hands, feet, anus, and abdomen show signs of swelling, who has become divested of complexion, strength and appetite. That man should be forsaken (by the physician) from a distance whose chest is largely filled with phlegm which is of a blue, or yellow or red color, and which comes out constantly. The physician possessed of knowledge should forsake from a distance that man the hair on whose body stand erect, whose urine becomes dense, who has fever with a dry cough, and whose flesh has been reduced. (p. 895.)

That man never recovers from disease who cuts off his nails with his teeth, or who tears off his hair with his nails, or who scratches on the earth with a piece of wood. That man who grinds his teeth in his waking hours, and weeps or laughs without adequate reason, and who does not feel any pain (or exertion) at all this, does not succeed in shaking off his disease. That man who, while ill, laughs and weeps frequently, who strikes his bed with his feet and who frequently touches the holes in the part of the body (such as the holes of the ears and the nose) does not live. The physician should predict the death of that person who derives nothing

but pain from those things which formerly used to give him pleasure. (p. 903.)

The wise are of opinion that the period of life has run short of that man, whose spittle, faeces, and vital seed sink in water (p. 906), which is highly significant of the advanced stage of knowledge at the time when it was written. In those who “are about to enter the great darkness” :—

The life-breaths become afflicted. Consciousness becomes suspended; limbs cast off their strength; exertions cease; the senses lose their functions; perception becomes obstructed; the mind becomes subject to anxiety; fear overwhelms the heart; memory leaves (the mind); intelligence also (does the same); modesty and brightness of complexion depart; disease and all its afflictions disappear; anger and energy are lost; conduct (or disposition) undergoes a thorough change; strength flies away; the shadow (or reflection) becomes abnormal; the brightness of complexion becomes lost; the emission takes place of vital seed (without adequate cause); the wind moves in an upward direction; the flesh becomes wasted; the blood also sustains diminution and decay; the heat (of the body) disappears; the joints become slackened; the smells become abnormal; the complexion and the voice suffer a change; the body becomes dry; the pores of the body are dried up; vapours are generated on the crown of the head; scabs occur on the head, of the kind called Daruna; those limbs of the body which were seen to move continuously become paralyzed and do not move at all. (p. 922.)

More pleasant to read is this passage :—

Getting up, in dreams, on the tops of houses and mansions and hills, riding on the backs of elephants and bovine bulls and steeds and human beings, crossing the sea, conversing with the deities and deceased ancestors in cheerful mood, beholding the rise of the waters of the sea, seeing the moon, the sun, the blazing fires, Brahmanas, kine, famous men, white clothes, and lakes of crystal water, accepting gifts of meat, fish, poison, unclean things, umbrellas, and mirror, the sight which is very auspicious, of white flowers in dreams, the sight of such vehicles as horses and bullocks and carts, journeying towards the east or the north, crying, rising up after a fall, and crushing one's foes, these are favourable signs which indicate recovery. Presence of indication of a strong mind, and devotion to the physician and Brahmanas, are signs of recovery, if the disease itself be curable and if the patient be not penetrated by despair. (p. 26.)

XX. The virtues of *ghee* in fever are set forth below :—

As men, desirous of extinguishing the flames, pour water upon a burning house, even so physicians administer ghee in mature fevers. In consequence of its oiliness it alleviates the (excited) wind; of its cooling properties, it checks the (excited) bile; and though its quality is similar to that of phlegm, yet, in consequence of its correction by particular drugs, it overcomes the (excited) phlegm also. (p. 942.)

XXI. *Preparations for renewing youth* :—

There is medicinal herb named “Brahma-suvarchala,” otherwise known as *Hiranyakshira* (in consequence of its exudation being of a golden color). Its leaves are like those of the lotus. There is also another herb named *Adityaparni*, otherwise called *Suryakanva*. Its exudation is (also) of a golden color. Its flower resembles the disc of the sun. There is an herb named *Nari*. It is better known as *Asavala*. Its leaves look like a goat. There is an herb called *Sarpa* which has the shape of a snake. There is an herb called *Kashayodha*.

Its shape is like that of a iguana. There is an herb named *Soma*. It is the king of all herbs. It has five and ten leaves. It waxes and wanes like the moon. There is another herb named *Padma*. It resembles the lotus in shape. Its color is as red as that of a lotus. It has also the fragrance of the lotus. There is another herb named *Aja* which is better known as *Ajusringi*. There is another herb named *Nila*. Its milk is blue in colour. It has blue blossoms. It is adorned with many a creeping branch. Of these eight herbs, which ever may be obtained, the expressed juice should be drunk by one to the measure of gratification. One should then lie naked within a vessel which has been constructed with the raw wood of *Butea frondosa* and which has been allowed to suck as much ghee as possible. The vessel should be covered at the time. One, subjecting oneself to this process, becomes attenuated into nothingness. One grows, again, within six months. Goat's milk should be one's sustenance. When this process is continued for full six months one becomes like unto a celestial in age, complexion, voice, shape, strength and lustre. One by this process gets such an excellence that one's speech reveals even the past. One's eyes and ears become like those of immortals. One can traverse a thousand 'yojanas' at a stretch. One's period of life is extended to full ten thousand years, uninterrupted by any ailment. (pp. 1059-1061.)

As we have seen in our study of the *Susruta Samhita*, at ii, p. 538 of the translation thereof it is written:—

The *Soma* plants are invisible to the impious or to the ungrateful, as well to the unbeliever in the curative virtues of medicine and to those spiteful to the Brahmanas.

And the translator notes:—

It should be mentioned, however, that as far as our knowledge goes, this *Soma* now-a-days is not within our reach. (Footnote ii, p. 531.)

But the translator of the *Charaka Samhita* has evidently no difficulty about identifying the plant *Soma*—for he writes:—

Soma, better known as 'Somalata,' is identified with *Sarcostemma brevistigma*, syn. *Asclepius acida*. The beverage prepared from this plant was regarded by the Rishis as sacred. The gods drank it in sacrifices. The Vedas sing its praises. *Susruta* mentions that it has two and twenty varieties. Considering the frequent mention of this plant in Hindu sacred literature, the names of those varieties deserve to be recorded. They are: (1) Ansumat; (2) Manjavat; (3) Chandramas; (4) Rajataprabha; (5) Durvasoma; (6) Kaniyas; (7) Svetaksha; (8) Kanakaprabha; (9) Pratanavat; (10) Talavrinta; (11) Karavira; (12) Swayamprabha; (13) Mahasoma; (14) Garudahuta; (15) Gayatra; (16) Traishtupa; (17) Pankta; (18) Jagatya; (19) Sankara; (20) Agnishtoma; (21) Raivata; and (22) Usupati.

The commentators explain that the leaves grow with the moon and fall off with her. The growth begins in the lighted half of the month. On the first lunar day of the lighted half of the month, only one leaf, on the second, two, grow. Thus on the day of the full-moon the herb is adorned with fifteen leaves. This is the maximum number. The leaves fall off one by one during the dark half of the month till on the day of the new moon the herb is shorn of all its leaves. (p. 1060, Footnote.)

Consequently it is possible that when some of the other plants mentioned in *Charaka's*

prescription have been identified, those who desire to renew their youth will be able to do so.

XXII. To those in search of *Aphrodisiacs*, the following will be of interest:—

Take some eggs of alligators, as also some eggs of hens. Fry them in hot ghee. Mix them then with the pulv. of 'Shastika' rice and new ghee. Make cakes of the product. These cakes may be taken by the person desirous of using an aphrodisiac. After taking the cakes, drink a glass of 'Varuni' wine. Through the virtue of these cakes, one can approach a woman like a stallion and discharge his seed like an elephant. (pp. 1082, 1083.)

The above terse description of ingredients and their effect beats all that we have read, and we have read much of the kind, in our study of Hindu Medicine.

Take a quantity of pork. Pound or grind it (in a pestle with the aid of a mortar). Add to it 'Saindhava' salt and the pulv. of pepper (of proper measure). Make boluses, of the size of jujubes, of the flesh thus prepared. Fry those boluses in hot or boiling ghee. Cast those boluses, hardened by frying, into the meat-juice of fowl, which has been enriched by the addition of ghee, rendered fragrant by perfumes and boiled with curds and the juice of the fruit of *Punicum granatum*. The meat-juice should then be so boiled that the boluses of flesh in it may not break. By drinking the meat-juice and eating the boluses of flesh, one obtains an inexhaustible supply of semen. (p. 1089.)

We cannot believe that the commentators never met with a case in which the desired effect was not produced by the use of these articles, but they have carefully abstained from setting their experience against the authority of the Sage. This is, we think, the curse of following authority instead of trusting to observation.

XXIII. Of fever we read:—

Fever is of seven varieties, (*viz.*) (1) that which affects the Rasa, (2) that which affects the blood; (3) that which affects the flesh; (4) that which affects the adeps; (5) that which affects the blood; (6) that which affects the marrow; and (7) that which affects the vital seed. Fever is again classed under eight heads according to the (immediate) cause which generates it, *viz.* (1) that born of wind; (2) that born of bile; (3) that born of phlegm; (4) that born of wind and bile; (5) that born of wind and phlegm; (6) that born of bile and phlegm; (7) that born of all the three excited together; and (8) that which is accidental, *i.e.*, born of wounds and other accidents.

Bodily fever appears first in the body; mental fever appears first in the mind. The indications of mental fever are a derangement of the functions of the senses. One afflicted with fever characterised by excitement of wind and bile craves for things that are cooling. One afflicted with fever characterised by excitement of wind and phlegm craves for things that are hot. (pp 1099, 1100.)

Fever is regarded as abnormal when it is not correspondent with the virtues of the season in which it appears. Such fever is also difficult of cure. (p. 1102.)

Tritiyaka (or tertian) fever is of three varieties: when phlegm and bile are excited, it is the lower part of the spine that becomes afflicted (with pain); when wind and phlegm are excited, it is the back that is afflicted; if it is the wind and the bile that are excited, it is the head that is afflicted. Chaturthaka (or quartan)

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fever shows two kinds of effects: if it is the calves that are afflicted (with pain), the phlegm should be known to be preponderant; if it is the head that is afflicted, the fever should be known to be born of wind. (p. 1105.)

That the seat of the fever influences its symptoms and its curability appears from this passage:—

If fever seizes and dwells in the *rasa* or juices only (among the *dhatu*s), the following symptoms manifest themselves:—Heaviness of the body; sensation of cold; anxiety and restlessness of mind; cheerlessness of disposition; vomiting and nausea; disgust for food; external heat of the body; yawns accompanied by languor of limbs and body. When fever seizes and dwells in the blood, the symptoms manifested are the following:—Pimples, having their origin in vitiated blood; thirst that is scarcely allayed by repeated draughts of cold water; frequent retching and spitting of matter mixed with blood; a burning sensation all over the body; redness of complexion; and a sense of inebriation, as if the patient has taken some alcoholic drink or other intoxicant, accompanied by delirious raving. If fever seizes and dwells in the flesh, the following symptoms manifest themselves:—The presence of internal heat; excessive thirst (that is not slaked by repeated draughts of cold water); cheerlessness of mind and pain of body; constant evacuation of stools; the presence of a foetid smell all over the body; and repeated tossing of the limbs. When fever seizes and dwells in the *adeps*, the symptoms manifested are the following:—Excessive perspiration all over the body, with thirst; delirious ravings; excessive restlessness (of both body and mind); a foetid smell in the mouth; excessive impatience and pain all over the body; and disgust for food. When fever seizes and dwells in the bones, the symptoms manifested are:—Both purging and vomiting; severe pain in the bones (as if they are breaking), accompanied by groans of straining; and constant tossing of limbs, and difficulty or heaviness of breathing. When fever seizes and dwells in the marrow, the symptoms are:—Hiccup and difficulty of breathing, as also bronchitis (with cough); the sight of darkness all around; severe pain in the vital parts of the body as if these are being torn as under; and a sensation of cold in the exterior, with that of burning in the interior. When fever seizes and dwells in the semen, the symptoms manifested are these:—The *Jiva-soul*, having emitted (a copious measure of) semen and having caused a suspension of the life-breaths, goes out of the body, accompanied by wind, heat, and Soma. That fever which has its refuge in *rasa* (or the juice), as also that which has its refuge in the blood is curable. That also which has its refuge in the flesh and that which has its refuge in the *adeps*, are equally so. That fever which has its refuge in the bones, as also that which has its refuge in the marrow is difficult to cure. The fever which dwells in the semen is not amenable to treatment (*i.e.*, is incurable). (pp. 1106–1108.)

The etiology of fever may be inferred from the symptoms observed:—

In consequence of the diversity of incantations, as also of curses (that may be denounced), the symptoms of fever born of incantations as also of that born of curses, vary according to the kind of incantation that is applied, or the kind of curse that is denounced. The symptom of fever born of lust, is, it has been said, thoughtfulness accompanied by frequency of deep sighs. In fever born of grief the symptom is plenty of tears. Excess of fear is the symptom of fever

born of fear. In fever born of wrath, the symptom is the manifestation of excessive violence. In fever induced by possession by deities, etc., the symptoms are exhibition of traits that are superhuman. In fever born of poisons, the symptoms are excess of swoons, heedlessness and pain. (p. 1113.)

And considerable differences are said to exist between immature and mature fever, for:—

Disgust for food, incapacity to digest, heaviness of the stomach, impurities in the chest, drowsiness, sloth, intensity and absence of intermission of fever, non-escape of the faults, discharge of salivary secretions, nausea, loss of appetite, filthiness of the mouth, stupefaction and loss of touch and heaviness of the body, copiousness of urine, presence of undigested matter in the stools, and cheerlessness (of both mind and body),—these are the symptoms of immature fever. Hunger, weakness, lightness of the limbs, mildness of the fever, escape of the faults, and eighth day,—these are the symptoms of fever that is mature. (p. 1114.)

Minute directions as to treatment are given, and the virtues of gruel are detailed:—

A person that has been purged and made to vomit should be treated with gruels in time, boiled with medicines suitable to the particular fever under which he may be suffering. It should be noted that '*manda*' should be given (then '*peya*,' then '*vilepi*'). The experienced physician should do this till the fever becomes mild or till the sixth day. The digestive fire of such a patient becomes enkindled by such food (*viz.*, gruels, in the forms of '*manda*,' '*peya*,' and '*vilepi*') like fire by fuel. Gruels, in consequence of being mixed with (proper) medicines, as also of their lightness, enkindle the digestive fire, and help the escape of the obstructed wind, urine, and stools. In consequence of their being liquid and hot, they produce perspiration. In consequence of their liquidity, they assuage thirst. In consequence of their quality as food, they uphold strength. In consequence of their mobility, they are light. In consequence of their being congenial to fever, gruels are alleviative of fever. Hence, the physician possessed of knowledge should treat fever with gruels at the outset. Those fevers, however, which arise from alcohol should not be so treated. (pp. 1116, 1117.)

The translator thoughtfully appends a note as to gruel:—

Gruels are of three kinds, *viz.*, '*manda*,' '*peya*,' and '*vilepi*.' The second is thicker than the first, and the third is thicker than the second. (p. 1116, Footnote.)

How ingeniously the commentators established the correctness of the Sage's teachings, when these seemed to be obscure may be judged from the following:—

The heat that causes fever is dry. Of a fever-stricken person who has been dried by heat, that constituent *dhatu* which strengthens the heat is the wind. The wind is alleviated by oily substances.

To this the translator appends a note:—

The object of this verse is thus explained by the commentators. Fever is born of the wrath of Siva. Wrath corresponds with heat, which is one of the five primal essences. Hence, it may be asked how oils can possibly alleviate the fever of a person who has been dried by heat? Oils are more likely to provoke that heat which has caused the fever. The answer is that although fever-causing heat is dry, and therefore dries up a person, yet it is the wind that supplies strength to that heat. The wind

is always alleviated by oils. Hence, oils alleviate heat or heat-born fever. (p. 1127.)

The meaning of a somewhat obscure passage in the Susruta-Samhita is made clear by the following aphorism, illuminated by the translator's note:—

Women that are beautiful and of full-grown limbs, and that are endued with youth, speedily alleviate by the heat that is in their bodies in consequence of their youthfulness, cold fever, if only they embrace the person that is afflicted therewith.

Says the translator:—

The reading I adopt is *Charupachitagatrah*. Some editions read *Pavitra*, *Charugatrah*. '*Upachitagatra*' means full-grown, that is, of deep bosoms and symmetrical proportions. (p. 1140.)

That measures other than drugging should also be employed is evident from the following remarks:—

The wearing of such gems as are auspicious or such herbs as are so, or of poisons, as also the use of such medicines as have been classed as 'Agadas' (destructive of poisons), checks intermittent fevers. By worshipping, with devotion, the supreme deity, Mahadeva, with (his spouse) Uma and his attendants (*viz.*, Nandi and others) as also the class of female deities called the Matris (or mothers) *viz.*, Brahmi, Maheswari, Vaishnavi, Aindri, Varahi, Kaumari, Kauveri, and Charchika, one is speedily freed from intermittent fever. By chanting for his praise the thousand names of Vishnu who is possessed of a thousand heads, who is lord of all creatures mobile and immobile, and who is endued with omnipotence, all kinds of fever become alleviated. By worshipping Brahman (the Grandsire of the Universe) the twin Aswins, Indra, the eater of sacrificial libations (*viz.*, Agni), the mountain Himavat, Ganga, the Maruts, and one's tutelary deities, one succeeds in subjugating all kinds of fever. Through devotion (reverence) to parents, worship of seniors and preceptors, the practice of 'Brahmacharyya', austerities, truthfulness of speech, observance of vows and religious rites involving self-denial, silent recitation of sacred texts, etc., performances of homa, making of gifts, listening to the recital of Vedic mantras, and the sight of righteous persons, one becomes quickly freed from (intermittent) fever. (p. 1145.)

XXIV.—Few of our readers will understand clearly what the condition known as Rakta-pitta (blood-bile) is, and we confess that we share this want of enlightenment, which is a pity for the condition is said to be so serious that:—

If checked at the outset, the following diseases may manifest themselves, *viz.*, suppression of the voice, oæna, swoons, disgust for food, fever, abdominal and other tumours, enlargement of the spleen, epistaxis, leucoderma, strangury, various kinds of leprosy, piles, erysipelas, loss of complexion, fistula-in-ano, and dulness of understanding and the senses. (p. 1153.)

There are seven holes in the head (*viz.*, the two ears, the two eyes, the two nostrils, and one mouth), and there are two holes in the lower part of the body. That blood-bile which has its course upwards is curable; that which has its course downwards is suppressible; while that which has its course both upwards and downwards is incurable. (p. 1152.)

That hæmorrhage may be meant has occurred to us, but this suggestion, although it is backed

up by the Ayurvedic literature, seems to be invalidated by the description of the condition, to which we would advise the eager reader to turn, as it is too long to quote. At any rate, whatever the condition described as blood-bile may be, its treatment has been laid down by the Sage *in extenso*. We quote only these passages:—

If the bowels are constipated of persons afflicted with blood-bile, the flesh of hares or rabbits, cooked with the potherb called Vastuka (*Chenopodium album*), proves beneficial. (p. 1156.)

Prapaundarika (the root-stock of *Nymphaea lotus*), liquorice and honey, dissolved in the expressed juice of horse-dung, or the roots of Yavasa (*Hedysarum alhagi*) and those of Bhringaraja (*Verbesina calandulacea*) reduced to paste and dissolved in the expressed juice of cow-dung, form good 'peyas' (drinks) that are alleviative of blood-bile. Each of these should be mixed with water in which (sundried) rice has been washed. Or, the expressed juice of cow-dung or horse-dung, mixed with honey and sugar, may be licked. (p. 1159.) The flesh of fowl and animals, having their habitat in the wilderness, mixed with honey, should be licked. When the blood of the patient becomes collected in ducts, he should then lick the dung of doves, mixed with honey. (*Ibid.*)

Here ends our study of the Charaka Samhita. It is abundantly clear from the extracts given that Charaka was not of the height of Susruta, although in the following anonymous verse his superexcellence in therapeutics has been immortalised:—

In the causes of disease, Madhava; in general principles, Bagbhata; in anatomy, Susruta; in treatment, Charaka.

We hope in another article to discuss the Ayurvedic system of medicine as taught and practised in this twentieth century.

A NEW TECHNIQUE OF HEART MASSAGE WITH A CASE OF RESUSCITATION.

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IN reviewing the literature of heart massage we find that this procedure has repeatedly been done, and in many instances with complete success; but in the career of any one surgeon, however long it may be, the opportunity will present itself but once or twice, if at all.

The first reported case was not until 1898 and the first reported complete success was as late as 1902, by "Starling and Lane," so that even now from a clinical point of view heart massage may be considered of fairly recent origin and application. Green (1) in 1906 reviewed the literature and gave an abstract of forty published cases. Many cases have since been reported, but from

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the leading Medical Journals (2) of many countries it would be difficult to collect more than ten successful cases in the last ten years.

Early operation.—Judging by the reported cases complete success depends upon prompt operation, only 6 to 8 minutes after heart stoppage. Mollison's case (3) made a good recovery after an interval of 13 minutes, but showed profound mental symptoms for several days. In view of modern physiological science and surgical skill, all will agree that heart massage should be done in cases of suspended heart action following an anæsthetic, which have failed to respond to the ordinary methods of resuscitation, and as these methods are in many cases of doubtful value they should not be relied upon. Schiff, as early as 1874, demonstrated by chloroforming dogs until the heart ceased to beat, that artificial respiration and stimulation by electricity were of no avail in restoring cardiac action, but that massage, directly applied, restored it after an interval as long as $11\frac{1}{2}$ minutes; furthermore that the shorter the interval of time that elapses before applying massage the higher the percentage of success.

The methods employed.—There has been a gradual evolution of methods of heart massage.

1. *The thoracic method.*—In this a flap consisting of the thoracic wall over the cardiac area is cut and turned back, the base being either inwards or outwards. The costal cartilages are cut through, the pericardium exposed and sometimes opened. The proceeding is forcible, and must accentuate shock. Many intercostal vessels and nerves are involved. Pneumothorax has occurred in several of the published cases, and it is not surprising that the successes were almost nil, and that the method has been abandoned.

2. *The abdominal route, subdiaphragmatic.*—It is a familiar fact that some pressure upon the heart can be effected from the abdominal side of the diaphragm, so it was a natural thought to apply such pressure, when the heart's action was arrested during the progress of a laparotomy operation. When promptly applied the conditions were favourable to resuscitation.

This method has probably been used at an early stage in many unpublished cases, and the promptitude has won success.

It is also possible that some of these cases might have recovered without massage. It has been demonstrated that in a child whose thorax is small and tissues elastic, compression is possible though difficult; but in the adult it would rarely be effective, as only the cardiac apex can be reached, and it slips away upward. Hence the need for the trans-diaphragmatic method to reach the base of the heart where the auriculo-ventricular nerve ganglia are situated.

Heart massage is a complex performance. In its lightest rhythmical form it may undoubtedly

stimulate the cardiac nerves, but a gentle squeeze of the organ does more; it empties the blood from the flaccid, perhaps distended, auricles into the ventricles, the blood current acts as the physiological stimulus to these, and then the coronary arteries supply fresh blood to the cardiac muscle; thus a healthy circle is re-established, and is reinforced by the artificial respiration, which should be carried on the whole time.

3. *The trans-diaphragmatic abdominal route* has been several times adopted, probably only unsuccessfully because too late. It need not be condemned on the statistics hitherto available. As above pointed out, the successful cases of sub-diaphragmatic massage were those in which an abdominal operation was being performed at the time of the heart failure. It was the facility and the promptitude which secured the success. The diaphragm was only incised in the late stages of the worst cases, as for example Green's second case, in which an hour after apparent death from diphtheritic syncope, he incised the pericardium through the diaphragm, and by massage started a few contractions. What more could have been expected? or Mauclair's cases after tracheotomy and other measures carried out for thirty minutes?

The trans-diaphragmatic incision seems in these cases to have been approximately antero-posterior, splitting the muscle fibres and gaining direct access to the pericardium. There is some difficulty in executing this manœuvre on account of the left lobe of the liver and the stomach; there is also some risk of injuring the musculophrenic artery and having concealed hæmorrhage; and the suturing of the opening in the pericardium and diaphragm is as difficult as it is also necessary.

Hence the advantage of the horizontal incision behind the left costal margin which we here describe.

Description of the new technique.—The abdominal incision is made four inches long in the median line extending from above the umbilicus well up into the xipho-sternal notch. The left costal cartilages are well retracted, bringing the anterior diaphragmatic insertion well into view. There should be a pillow under the waist. A two-inch incision beginning one inch to the left of the median line carried outwards behind the costal margin cuts the fibres of the diaphragm near their insertion. A blunt instrument pushed in opens the pleural cavity, and the opening is rapidly dilated with two or three fingers of the right hand, so that the whole hand can then be passed into the thoracic cavity anterior to the pericardium. The hand is passed upward, the thumb behind the sternum and the fingers embracing the entire organ in the pericardium. The thumb compresses the right auricle and ventricle, and the base of the heart is effectively

massaged. No vessels are injured in this incision as the superior epigastric artery is internal to the incision and passes into the rectus muscle, and the musculo-phrenic branch enters the diaphragm through the cellular tissue behind the 8th or 9th costal cartilages and passes backwards, deeper than the incision. The liver and stomach even if prominent offer no obstruction to this route, nor is the pericardium in risk of being opened. During the massage the parts can be pressed round the wrist of the operator so that air is not sucked in, and there is no tendency to collapse of the lung.

Closure.—The incision is easily closed and made air-tight. The costal margin is retracted and the cut diaphragm pressed up while a continuous catgut suture is inserted by means of a strong curved needle and holder. While this is being done the assistant can make rhythmic pressure during inspiration, relaxed during expiration, so that any contained air may be expelled and no more be allowed to enter. The abdominal wound is then closed in the usual way.

Abstract of a case.—Pte. M. P., aged 37, was severely wounded on October 26, 1917, both knee-joints being involved. There was prolonged treatment and several operations. By March 1918, both knees were healed, the left knee ankylosed, and he was allowed up. A week later some vague shifting abdominal pains began to appear, with tenderness and some rigidity, first on the right flank then on the left, and an irregular temperature. He also had a cough. Diarrhoea alternated with constipation. A week later he had retention of urine, and the Orderly Officer passed a catheter; there was some pyuria and diminished quantity of urine. No casts were found. He was thin and losing ground; with a blood-pressure of 155 mm. and leucocyte count 12,000. In consultation it was decided to perform laparotomy to determine the presence of any abdominal abscess, and the condition of the kidneys; some metastatic sepsis being suspected.

Operation.—On March 30, after a preliminary hypodermic of atropine $\frac{1}{100}$ and morphia $\frac{1}{4}$ th, chloroform was slowly and carefully administered by the open method, by an experienced anaesthetist.

TIME TABLE.

11-45 A.M.—Began anaesthetic.

11-55 A.M.—Almost under: Anaesthetist asked the surgeons to wait a minute as the patient was not yet fully relaxed.

11-58 A.M.—Respiration ceased, pupils dilated, and colour changed to waxy. No pulse could be felt.

Artificial respiration at once begun with rhythmical traction of his tongue, and head of table lowered.

12-0 A.M.—Strychnine and ether hypodermically. Auscultated, no heart sounds.

12-10 P.M.—Artificial respiration pumps air well into chest, but nothing spontaneous, eyes staring open, pupils dilated and insensitive.

Capt. Bost made a four-inch epigastric incision, passed his gloved hand in, and pressed on the heart through the diaphragm. The heart felt quite flaccid and slipped upwards so that only the apex could be pressed, and there was no response.

12-15 P.M.—Artificial respiration continued, and some rhythmical heart pressure first by Capt. Bost then by Major Neve.

12-20 P.M.—The case appeared hopeless, but Capt. Bost proposed to insert his hand into the thorax, and did so incising the diaphragm as described above; he passed his hand up under the sternum, outside the pericardium to the base of the heart, which he could then completely grasp, and began slow pressure.

12-25 P.M.—At first the organ was completely flaccid; after perhaps 12 seconds a sort of muscular twitch was felt, followed by a very feeble contraction which in a few more seconds became strong and regular.

12-30 P.M.—Pulse felt, colour returned, and massage stopped, injected pituitin: artificial respiration continued. The diaphragm was sutured.

A rapid exploration of the abdomen was made by Major A. Neve. There was some free clear fluid, and no pus, nor any inflammatory adhesions. The kidneys felt large. The wound was sutured and dressings applied.

12-45 P.M.—Bandaging completed. Breathing slowly. Strong visible cardiac pulsation.

1-15 P.M.—Back in ward. Blood pressure 145 mm.

1-30 P.M.—Continuous proctoclysis was begun. He lay comatose.

March 31st.—Still in same state, pupils medium size, sluggish.

April 1st.—Still same state, has had no convulsions. Has slight emphysema over left chest. Takes only one or two ounces of peptonized milk at the time as he swallows badly. Pulse still strong and rapid.

April 2nd.—Emphysema has disappeared. He is more comatose. Died at 5-30 P.M., 77 hours after the operation.

Post mortem on April 3rd.—The laparotomy wound was well closed and quite clean, also the incision in the diaphragm, which was quite airtight. There was no pneumothorax, and the chest looked healthy, except some septic metastatic foci at the base of both lungs. The pericardium and heart looked healthy. Both kidneys showed small calculi and pyelo-nephrosis. The left ureter was partly blocked by the pus and gravel at the bladder orifice.

Remarks by Major Neve.—The striking success of Capt. Bost's procedure in this case as regards the resuscitation of the heart's action after 25 minutes' absolute cessation proves the value of efficient heart massage. Without that the man was already dead. It was clear to all the five surgeons who were present, that we were dealing with a case of primary heart failure under chloroform narcosis, due to the toxæmia of the patient's disease.

We could carry on the respiration without his muscles, but not the circulation. Sub-diaphragmatic massage was inefficient, because it did not stimulate the cardiac nerve ganglia at the base; but after incising the diaphragm and grasping the base of the heart, ten or twelve gentle squeezes started regular contractions, and the strong apex beat became visible to all onlookers. We have discussed the technique elsewhere. The incision was one which Capt. Bost had previously planned on a cadaver.

It is unfortunate that this method was not adopted a few minutes earlier.

CONCLUSIONS.

1. We consider that this case illustrates the unique value of heart massage, and that the human heart can be resuscitated after a variable length of time, in this instance after 25 minutes.

Nothing else could have re-started the cardiac action in this case.

2. *Type of cases for massage.*—All cases of suspended heart action following an anæsthetic, regardless of theoretical, etiological factors after a certain interval. Cases of asphyxia should also fall within this group.

3. *Length of interval.*—This should probably vary with individual cases, but should rarely be done under 5 minutes (unless the abdomen be already open) and certainly after 8 minutes, though a longer interval need not bar the operation.

The simpler methods of resuscitation, such as artificial respiration, tongue traction, sharp percussion over the cardiac region, and inversion of the patient, should begin in the first minute, but not be uselessly persevered in to the neglect of more efficient measures.

4. Sub-diaphragmatic massage may suffice, especially in children, and if very promptly undertaken. But if only the apex is reached and the

heart remains unresponsive, the diaphragm should be incised and the base of the heart be massaged without further delay.

5. That no surgeon, even if relatively unskilled, should be content to abandon a case without giving his patient the benefit of direct cardiac massage.

6. We claim that this new technique offers a simpler method of approach and is a decided improvement upon all other ways of doing direct heart massage, as it involves less risk of hæmorrhage, trauma and shock, and can subsequently be more quickly and satisfactorily closed.

REFERENCES.

- (1) Green, T. A., *Lancet*, 1906, ii, 1708-1714. See also Cackovic Archiv Klin. Chirur., 1909. Abstract in Journal Amer. Med. Assoc., 1909, lii, 1549.
- (2) Frazier, Journal Amer. Med. Assoc., 1911, lvi, 1448. Lambert, Austral. Med. Journal, 1911-12, N. S. I. 527. Wrede, Arch. Klin. Chir., 1913, Cl. 833. Weitz, Deutsch. Med. Woch., 1915, xli, 338. Breitman, Trans. Internat. Congress Med., 1913, Sec. v, Pt. 2, 264. Thomas, A. R., Journal Roy. Nav. Med. Service, 1918, iv, 91.
- (3) Mollison, W. M., Brit. Journal, Child. Dis., 1917, xiv, 42.

CARDIAC MASSAGE IN CHLOROFORM POISONING.

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As these cases are not very common, a short account of the following may be of some interest. The patient, Private Rarshid Saleh, aged 24, was admitted into No. 34 General Hospital on the 4th May, 1918, convalescent from dysentery.

He was feeble and emaciated and had slight attacks of diarrhoea off and on. His pulse and temperature were practically normal. On the 26th May, 1918, the patient developed signs of early ascites.

On the 13th June, 1918, the abdomen was sufficiently tense to cause considerable respiratory difficulty. At this time we had in the hospital a series of cases of ascites of obscure origin, and as the ascites had rapidly recurred after tapping or simple laparotomy in some of the other cases, I decided to perform lymphangioplasty on this case.

At 10 A.M. on the 13th June, 1918, the patient was anæsthetised with chloroform.

After I had applied the sterilised towels to the abdomen, the anæsthetist informed me that the patient had stopped breathing. It was evident, from the colour of the mucous membranes and the absence of a pulse at the wrist, that the heart had stopped. This was confirmed by means of the stethoscope. Artificial respiration was tried for two to three minutes with no result.

As the operation proposed, namely lymphangioplasty, involved a laparotomy in any case, I decided at this stage to open the abdomen and try the effect of cardiac massage, while Captain

de Mowbray and the anaesthetist persevered with the artificial respiration.

A 3-inch median incision was made above the umbilicus. Then, with the left hand over the cardiac area externally, and the right on the under-surface of the cardiac portion of the diaphragm, I submitted the heart to a series of rapid squeezes between the two hands at the rate of about 50 to 60 a minute. After the 10th compression the heart started beating. It went on for 30 beats at the rate of 90 to 100 a minute and then stopped.

The squeezing was repeated, and after the 4th compression the heart again started beating—at first very irregularly, and stopping at intervals for 2 to 3 seconds. After about 10 minutes of this irregularity, the heart beats and pulse started alternating, and the alternation continued until the onset of the final collapse preceding the patient's death sixteen hours later.

Curiously enough, natural respiration only commenced with the onset of the alternation. As soon as the patient seemed to be out of danger, four lymphangioplastic silk threads were rapidly inserted and the abdomen closed without any further anaesthetic being required.

The patient took about two hours to regain consciousness. At 4 P.M., *i.e.*, six hours after the operation, the patient had completely come round from the anaesthetic and said he felt fairly well, except for the pain at the site of the incision. His pulse-rate was then 98. He was also able to take sips of milk and water.

Soon after midnight he developed rapid collapse and his pulse-rate went up to 150 or more. The ordinary methods of treating collapse were tried with little or no results, and the patient died at 2 A.M.

It is interesting to know that another of these cases of ascites died fairly suddenly about 12 hours after a simple laparotomy.

Two more who had not been surgically treated also died somewhat suddenly, so that it is possible that the anaesthetic may not have been the main cause of this patient's death.

During the above procedures, I was impressed by two other facts of considerable interest:—

1st.—That the heart could not be felt through the diaphragm when it was not beating; but as soon as it commenced to beat, the cardiac impulse was much more distinctly felt than the apex beat on the chest wall.

2nd.—That the colour of the mucous membrane of the lips was restored after 3 to 4 beats of the heart, whereas the colour of the peritoneum only returned after a dozen beats.

In conclusion, I wish to thank Lieut.-Colonel F. H. Maturin, R.A.M.C., for permission to publish this case.

SOME POINTS IN CONNECTION WITH WAR INJURIES OF PERIPHERAL NERVES.

By T. W. FOULKES, F.R.C.S.,

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THE difficulties in the diagnosis and treatment of peripheral nerve injuries in the early stages of gunshot wounds are considerable, and they do not seem to the general practitioner to have been made much clearer by many of the descriptions that have been published from time to time during the war.

It is very difficult, if not impossible, to find out if a nerve has been cut through, bruised or merely pressed upon by damaged tissues or exudation in the neighbourhood.

The consensus of opinion among neurologists in Europe seems to have arrived at the conclusion that early operation is inadvisable and that more harm than good results from interfering with a nerve that may be in process of regeneration, new axis cylinders being particularly susceptible to damage. On the other hand, if a nerve has been cut through (and there is no way of knowing this except by looking), the ends may be so placed that the nerve can regenerate; but they may not. In the latter case the ends must be united by operation later, but regeneration usually takes double the time by secondary suture that it does by primary. The temptation is, of course, strong to operate on every case that appears to be a complete lesion but the war experience in Europe has been that such cases may recover as well without operation as with, and no surgeon really feels a better man for having done an unnecessary operation.

The difficulties are further increased in the case of sepoys. It is of very little use to look for paralysis or sensory loss at the time of admission (we get our casualties here within about 7 hours of wounding). A limb at this time is generally swollen and tender all over, perhaps there is a fracture and the man may be sleepy from the effects of morphia. As regards sensory loss too, a sepoy usually considers he has a right to have anaesthesia over the entire limb that is injured and he will endure any amount of pin-pricking to establish this. It is not possible to get him to understand why we think it important to map out areas of anaesthesia. He only realises that he is an injured individual and may perhaps get sent to India.

The next point is, having found that there is a nerve lesion, what is the proper thing to do? As mentioned above, European surgeons who have had special experience in this class of case, leave nerve lesions alone from the operative point of view till the third to the fifth month. It would be interesting to know what has been the experience in the Indian war hospitals. Have there been better results in cases operated on

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early or have they benefited by being left till later? Very little comparatively has been written regarding Indian experience, which is unfortunate, war surgery being team work on a large scale. It may be that climatic or racial differences produce quite different results from those obtained in Europe. Also it is probable that the European cases have all been septic, whereas here, at any rate, sepsis in gunshot wounds is almost non-existent.

The following cases are described partly to illustrate what has been stated above, partly because there are points of interest in the cases themselves.

Injury to great sciatic.—Naik J.—Wounded by accidental bursting of a bomb. He was suffering from shock at the time of admission. There were two small wounds, one in the right thigh up on the outer side, the other on the outer side of the leg. X-rays showed there was a fragment of metal deeply embedded in the neighbourhood of each wound. At first he complained of much pain in the whole of the right leg but there was no loss of power. The wounds were dressed and the limb placed on a Mackintyre splint. About ten days later, when the wounds were healed, it was observed that there was some wasting of the calf muscles and, on further examination, it was found that there was weakness in all the muscles supplied by the great sciatic nerve, i.e., in all the muscles below the knee and in the hamstrings. There was loss of sensation to touch and pain on the outer side of the leg and the dorsum of the foot. The weakness and wasting increased and on 2nd January, 1918, a month after his admission, operation was performed. Incision made down the middle of the back of the thigh and the hamstrings were retracted. It was disconcerting to find that the nerve was nowhere visible; the incision was considerably prolonged till the nerve was found lower down and followed upwards. It was then seen that the small piece of bomb, passing from without inwards across the limb, had caused the production of a cord of scar tissue which had caught up the nerve and dragged it gradually inwards until the nerve lay behind the tuber ischii. The nerve was kinked to nearly a right angle. The cord of scar tissue was divided and the nerve examined; it appeared not to have been wounded but merely involved by the scar becoming adherent to the posterior part of the sheath. When the scar tissue was dissected off, the nerve was quite soft and no thickening could be felt. The nerve was then laid in its place on the adductor magnus with only clean muscle around it. Two days later there was return of sensation over the outer side of the leg but the dorsum of the foot was still insensitive. The wound healed well and 10 days after the operation he was evacuated by hospital ship.

It is hard to see how this case could have gone without early operation.

Wound of posterior interosseous nerve: Tendon grafting.—Sepoy G. S.—Wounded across the back of left forearm. Entry at level of middle of radius, exit behind the ulna four inches below elbow. X-rays showed no bony lesion, but later there was a nodule on the back of the radius near the entry wound due to grazing of the bone. There was paralysis of the extensors of the thumb at the time of admission. When the wounds were healed it was found that the extensor ossis metacarpi pollicis, the extensor primi and secundi internodii pollicis, were all paralysed and gave no response to faradism. The extensor indicis was doubtful, the finger could be extended and separate extension could be evoked with the faradic current but I think this was due to the action of the common extensor, whose nerve supply would not be affected by a lesion at the level of the wound. It was clear that the posterior interosseous nerve had been damaged, probably divided.

Operation was performed about a month after admission. Incision made down the middle of the back of the forearm, the fascia divided and the extensor communis digitorum retracted towards the ulna. No trace of the nerve could be found, the ends being presumably drawn out of sight by the scar. As it seemed doubtful if a repair would be possible on a nerve so small as the posterior interosseous at this point, even if discovered, it was decided not to waste time in further search and the incision was prolonged down to the wrist and well retracted. The tendon of the extensor carpi radialis brevis was found and cut through about one inch above the annular ligament. The distal end was brought across and sewn into a slit made in the tendon of the extensor carpi radialis longior, the idea being to avoid wasting the insertion of the extensor carpi radialis brevis. The proximal end of the extensor carpi radialis brevis was then sewn to the tendons of the extensor primi internodii and extensor ossis metacarpi pollicis, which were partly detached from their muscular bellies. Then, with the idea of preventing the unopposed overaction of the flexor longus pollicis on the terminal phalanx of the thumb, a separate small incision was made over the dorsum of the metacarpo-phalangeal joint of the thumb and the tendons of the two thumb extensors were roughened and stitched together while the terminal phalanx was held in a position of semi-flexion.

When the wounds were all healed the patient seemed to have lost all power of movement in the thumb, he could neither flex, extend nor oppose it. As the operation could not have affected all the nerves and muscles concerned, the disability was in all probability purely functional and he

was massaged. Later, when there was no chance of tearing asunder the stitched tendons, he was tested with the faradic current and good twitches were obtained from all the muscles in the forearm except those paralysed. On stimulating the extensor carpi radialis brevior high up there was definite extension of the thumb. Extension was, however, most marked in the extensor ossis metacarpi pollicis whereas I wanted to get the chief action from the extensor primi. It may be advisable later to shorten the tendon of the extensor primi in order to get the main extension on the proximal phalanx.

This was an operation of necessity because if the flexor muscles of the thumb were allowed to contract unopposed the result would be that the thumb would be curled up into the palm of the hand. Later still the action of the thenar muscles would dislocate the proximal phalanx forward and the hand would become almost useless.

Lesion of musculo-spiral in shoulder.—Sepoy D. S.—Wounded through the right shoulder, the bullet having entered in front opposite the centre of the clavicle, passed down the arm and made exit on the back of the arm at the level of the insertion of the deltoid. He was observed to have had wrist drop from the first and the arm was put up with the forearm flexed and the wrist and fingers hyper-extended. When the wound was healed he was found to have paralysis of all muscles supplied by the musculo-spiral nerve. Except for slight twitches obtained by faradism applied to the long head of the triceps, none of the muscles of this group responded to stimulation. Anæsthesia uncertain but definite over the radial distribution area. The difficulty was to decide just where the nerve had been injured, the wound track being more or less along the course of the nerve the whole way. As however the deltoid reacted to faradism and there was no loss of sensation over the circumflex area, it seemed likely that the lesion was below the division of the posterior cord of the plexus and that an incision in the axilla would meet the case. The axilla was then shaved and cleaned and a compress of perchloride of mercury was applied. Two days later the man showed with some pride that he could extend his fingers. The compress had apparently had a poulticing effect and had caused absorption of something that was compressing the nerve, perhaps, blood or exudation. The hint was followed up and he was fomented regularly with the result that when he was transferred to hospital ship a fortnight later, extension of the wrist and fingers and supination were all fairly strong.

Lesion of ulnar nerve in the forearm.—Sepoy B.—Wound across right forearm entering three inches below elbow on ulnar side, exit four inches below elbow on the radial side, both wounds and track being in front of the bones which were

uninjured. Wounds healed well but there was weakness and loss of sensation corresponding to the ulnar nerve distribution to the hand. Not well marked at first, but increasing as time went on till about three weeks after admission there was a complete picture of an ulnar lesion in the hand with tendency to *main en griffe*, which was prevented by suitable splitting. The muscles supplied by the ulnar nerve below the level of the wound gave no response to faradism and it was decided to operate.

Incision was made in the line of the ulnar nerve, the flexor carpi ulnaris was separated from the flexor sublimis digitorum and the ulnar nerve was found above and below the level of the wound. At that point there was a mass of scar tissue which surrounded and hid the nerve. The scar tissue was carefully separated from the nerve. During the dissection the distal end of the ulnar artery was opened, the proximal end of the artery was not seen, it seemed as if the artery had been divided by the bullet. The nerve, when clear of the scar, was soft and apparently undamaged. It was laid in a clean muscle bed and the wound was closed. It healed well but I do not know the subsequent history as the patient was evacuated about a fortnight later.

This case is of interest to me in particular as, in this operation, I first made use of a little device which I have described more fully elsewhere.* This was the use of the faradic current to differentiate the muscles when operating. If an active electrode be applied to the surface of a muscle either bare or through the fascia, if the current is not too strong, it will not overflow to adjoining muscles but will only cause contraction in the muscle to which it is applied. In such operations as the exposure of the ulnar or anterior tibial arteries the difficulty is to find the way between certain muscles. When the white line, which we learn about in operative surgery courses, is more imaginary than usual, it may be very hard to get into the right plane. If then one muscle be made to contract while its neighbour is relaxed, the problem is solved at once. In the case described, the process was more simple as it was only necessary to stimulate the ulnar nerve behind the inner condyle. This caused contraction of the flexor carpi ulnaris and made it quite easy to identify and then to separate it from the uncontracted flexor sublimis digitorum.

CELLULOSE AND CHRONIC CONSTIPATION.

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As the title of this article may suggest to some of the readers of *The Indian Medical Gazette*

Kangri Collection, Haridwar

a plea for vegetarianism, I will begin by saying "Not guilty," and at once declare my belief that, generally speaking, there is no such thing as a bad food—be it animal or vegetable in origin. All the foodstuffs ordinarily used by the *genus homo* are good, when discrimination is exercised in their use. Indeed, discrimination in the use of the foods that man ingests is the solution of the vexed problem of diet.

That intestinal stasis or constipation has to be combated in most acute maladies, as well as in almost all chronic diseases, is a fact well recognised by every experienced medical man. Again, it is common knowledge that numbers of so-called healthy individuals suffer to-day from chronic constipation, and that the condition is recognised as inimical to health is proved by the fact that most of us try to keep ourselves fit by becoming the victims of the laxative or purgative drug habit.

Now, whilst the use of purgatives or medicinal laxatives is at times very necessary and always justifiable when required as a temporary measure, their routine employment is highly injurious to the stomach and intestines, as well as the liver and kidneys.

Van Noorden says, "Nothing is so bad as the chronic use of laxative drugs," and when it is remembered that they all force bowel action by irritation (wrongly termed by the laity "stimulation"), and constant irritation is harmful to the well-being of any tissue or organ, it is obvious that this eminent physician's teaching on the point is well founded.

Indeed, I do not think I am guilty of exaggeration when I state the average colon of forty years of age and upwards, in most civilised communities to-day, is in such a jaded, depressed or unhealthy condition, from the habitual use of purgative or laxative drugs, that it must either be removed or reformed to render life something very much more enjoyable than millions find it to-day.

The writer cannot accept the popular view that chronic intestinal stasis and its attendant evils are the result of man's so-called misfortune in having a long colon. Because some years ago after many disheartening failures to cure himself and others of chronic constipation, he discovered the remedy.

I found that the rational cure for the trouble, in adults, consists largely in cultivating the easily attained habit of living on two meals a day, the first of which is usually taken about mid-day and the other in the evening. Regarding the question of the food to be taken at these two meals, generally speaking, one should eat sparingly of body-building or protein foodstuffs (*e. g.*, grains, pulses, nuts and animal food) and feed freely on fruits, salads and ~~properly prepared~~ vegetables. That is to say, vegetables that have

not had their valuable food salts boiled out of them.

The rationale of the method appears to me to be as follows: Cannon's experiments show that bulk is a most effective means of stimulating the propulsion of food through the digestive tract. And segmentation of the intestines becomes really active only when the bowel becomes adequately distended. Bulk, not simply in the food itself but in the residue left after the absorption of the nutritive portion of the food, is a factor of prime importance in promoting expulsion of the bowel contents.

Schmidt and others have shown that an acid condition of the contents of the colon, brought about by the ingestion of fruit acids and the fermentation of starch and sugar, promotes bowel activity. Whilst an alkaline condition of the contents of the colon, established by putrefactive changes occurring in albuminous or protein matter, tends to produce constipation.

By eating freely of fruits, salads and vegetables we obtain not only an ample supply of carbohydrates (the petrol of the body, so to speak), vitamins and food salts, but also a large non-putrescible acid residue, consisting of much unabsorbed starch and cellulose, wherewith to stimulate bowel activity.

On the other hand, when more protein is taken than can be digested and assimilated by the individual, the residue forms an excellent culture medium for the growth and development of harmful germs, and an alkaline condition of the colon contents is established, which makes for constipation. An evil smelling stool is evidence of this mistake. As is well known, a healthy, natural motion has little or no unpleasant odour.

The young of man and animals furnish a striking proof of the fact that only a small quantity of protein is required daily. For they not only live, but grow, on milk—a food which contains not more than $3\frac{1}{2}$ per cent. of protein.

Without doubt, a low protein intake with plenty of water, starch, sugar and unabsorbable cellulose is the normal diet of man, as it is of other animals that, like him, possess a long sacculated colon, such as the horse and man's cousin—the ape.

High protein feeding animals, such as lions, tigers, dogs and cats, on the other hand, have a short smooth colon. Consequently, the movement of foodstuffs along this short smooth passage is rapid. A provision of nature, which is necessary for the health of these animals, since the undigested remnants of their diet of flesh, skin and bones, if long retained in the colon, would undergo putrefactive changes and produce poisons of a character dangerous to these creatures.

Experience has proved to me and many others that by taking only two meals daily, at the times already specified, a very keen appetite for each of

the two meals will generally be present. And sufficient food of the right kind can be taken to provide the bulk and stimulation necessary to produce one, if not two, good bowel movements daily. Speaking of myself, I rarely fail to have two good bowel movements a day.

On the other hand, if the same quantity of food that is taken at the two meals be divided into three or four meals, the smaller meals will not, as a rule, produce even one good daily movement, let alone two.

As a matter of fact many so-called healthy people, who make a boast of being small eaters, are always constipated. Even if the bowels are moved once a day, the discharged matter should have been got rid of twenty-four or forty-eight hours before. In other words, they suffer from latent constipation, the evil results of which, in the long run, do not materially differ from those of other forms of constipation.

In this connection it should be remembered that an important factor in the prevention of putrefaction in the colon is rapidity of the movement of the body wastes and food residue along this portion of the alimentary tract. Even though the quality of food is such that it does not conduce to putrefactive changes taking place, putrefactive organisms in the colon can always find in the epithelial cells cast off with the bile and other secretions, enough protein material to support their growth and development, provided there is sufficient delay in bowel movement for these processes to become firmly established.

As a rule, I find little, if any, difficulty in convincing intelligent patients of the necessity for eating two good-sized meals of the right kind in the day, when in health. But they require a very great deal of assurance against some of the supposed dangers of going about with an empty stomach in the morning. Amongst the most common of these are the following, with my comments thereon:—

"Is there not a great risk of getting cholera, enteric fever and dysentery from going about with an empty stomach in the morning?" No. These diseases are contracted by ingesting food and drink contaminated by the organisms that are the exciting cause of the disease. Obviously, then, if you do not eat, and only drink some weak tea, you cannot possibly put the germs into your stomach and run the risk of falling a victim to these complaints.

Here I may state that in a letter on "Gastric Juice and Prevention of Enteric Fever and Cholera," published in the *Journal of the Royal Army Medical Corps*, February, 1916, I pointed out that Pawlow's gastric experiments prove that mechanical stimulation of the stomach (i.e., the mere act of putting food into it) does not constitute an effective excitant of the gastric glands. A passionate longing for food—psychic

stimulation—and the satisfaction of thoroughly enjoying it, is necessary for the most intense activity of the gastric glands.

I further showed that both officers and men frequently rendered themselves liable to contract cholera, dysentery and enteric fever by eating when they were fatigued and had no appetite, and suggested the remedy. My argument was that if gastric juice can digest the protein contents of food, when a keen appetite and therefore a sufficient amount of gastric juice is present, it is also equal to the task of digesting enteric, cholera and other bacilli, which after all are nothing but mere masses of protein.

"Is it not a fact that people who do not eat *chota haziri* or breakfast get malaria?" I shall answer this question by asking another, "Are you quite certain that those who take *chota haziri* and breakfast are immune from attacks of malaria?" Believe me, a mosquito net is a far greater defence against the insect which inoculates us with the malarial parasite than food in the stomach.

"What about the protective influence of *chota haziri* and breakfast against sunstroke?" Sunstroke is caused by the rays of the sun beating on the back of the head and spine, and however full of food your stomach may be, it cannot possibly keep the sun off these vulnerable parts. I, in common with many others, find that a good pith topi or sun umbrella is a very much greater defence against sunstroke than food in the stomach.

Barely two centuries ago, the first meal of the day in England was taken at about noon. Breakfast was an unrecognised meal, and it originated in the practice of ladies taking an early dish of chocolate before rising. As for *chota haziri*, thousands of Europeans who come to India to-day have never indulged in this small meal at Home. Truly, popular tastes and prejudices are rooted more in social habits than in basic physiological demands.

Those who suffer some discomfort in the morning when they first make a change in their mode of living, will find if they take a good saline purge on rising, any unpleasant symptoms which may arise from going about without *chota haziri* or breakfast, will disappear after the second or third morning. Indeed, I generally advise all my patients to take this precaution for the first two or three days of the new régime.

We have seen that the human alimentary canal is adapted for the use of somewhat bulky and moderately coarse foodstuffs, and that cellulose is as necessary as nutriment. The following useful table extracted from Dr. Kellogg's book, "Neurasthenia or Nervous Exhaustion," shows the amount of cellulose contained in an ounce of different foodstuffs.

CELLULOSE CONTENTS OF COMMON FOODSTUFFS.

VEGETABLES.			Number of grains of cellulose in one ounce.
Cabbage ...	...	...	9'2
Parsnips ...	...	...	8'6
Brussels sprouts ...	...	...	7'8
Celery ...	...	...	7'
Turnips ...	...	...	6'6
Pumpkins ...	...	...	6'1
Melons ...	...	...	6'2
Potatoes ...	...	...	5'4
Beetroot ...	...	...	5'2
Asparagus ...	...	...	5'2
Carrots ...	...	...	4'9
Spinach ...	...	...	4'6
Cauliflower ...	...	...	4'5
Tomatoes ...	...	...	4'2
French beans ...	...	...	4'
Cucumber ...	...	...	3'9
Lettuce ...	...	...	3'6
Onions ...	...	...	3'5
PULSES.			
Beans (dried) ...	...	...	40'
Peas (dried) ...	...	...	28'5
Lentils ...	...	...	20'5
Green peas ...	...	...	9'3
GRAINS OR CEREALS.			
Bran ...	...	...	200'
Oatmeal ...	...	...	44'
Barley ...	...	...	20'
Wholemeal wheat flour ...	...	...	10'
Cornmeal ...	...	...	10'
FRUITS.			
Raspberries ...	...	...	37'
Blackberries ...	...	...	25'
Cranberries ...	...	...	25'
Currants ...	...	...	23'
Figs ...	...	...	22'5
Gooseberries ...	...	...	17'5
Pears ...	...	...	15'
Apricots ...	...	...	12'5
Oranges ...	...	...	10'
Prunes ...	...	...	10'
Cherries ...	...	...	10'
Plums ...	...	...	7'5
Grapes ...	...	...	7'5
Apples ...	...	...	5'
Peaches ...	...	...	5'
Bananas ...	...	...	1'5

In certain cases of constipation where a sufficiency of fruits, salads and vegetables cannot be taken, to produce the hoped-for result, I prescribe the use of cellulose in concentrated form, *i.e.*, wheat bran and agar-agar.

Wheat bran, as will be seen from the above table, contains 200 grains of cellulose to the ounce, and is probably the oldest and best remedy for constipation. It may be freely used in a number of palatable and efficient ways. For example—mixed with fish cakes, or with minced meat. It can also be used in the making of biscuits and bread. Or it can be added to mashed potatoes and other vegetables. At least one to two tablespoonfuls of bran should be taken with each of the two daily meals.

Properly sterilised and cleaned public health can be used when well moistened becomes soft and pliable as

wet paper, and excites bowel action—not only by giving sufficient bulk to distend the intestine but also by gentle titillation, so to speak.

The apprehension that some writers have expressed regarding the irritating effect of bran is wholly imaginary. When properly cleaned and sterilised, I have used it in a number of cases of chronic colitis, with nothing but excellent results. Colitis is the result of constipation, and this will only be aggravated by the bland, concentrated diet which is usually recommended for the disease. Experience has proved to me the value of bran, coarse vegetables, and other bulky foodstuffs in chronic colitis, as well as in constipation.

Agar-agar or hemi-cellulose, commonly known as "Japanese Seaweed," may also be used with advantage in all cases of sluggish bowel action. Experiments carried out by Mendel, Kellogg and others, show that it cannot be digested by any of the fluids of the body, with which it comes in contact.

I usually order it to be taken as a jelly made up with stewed fruit. It is an excellent remedy for preventing hardened residues in the intestines, owing to its astonishing avidity for water.

Purified Russian paraffin oil is another remedy I make use of at times. But as I realize the fact that the natural lubricant of the cæcum and colon is not paraffin; but a sufficiency of water and cellulose, I do not encourage the habitual use of paraffin, except when a mechanical intestinal lubricant is required to overcome "kinks" due to redundancy of the colon, from long continued distension, or to adhesions arising from colitis or other causes.

In addition to the regimen already specified, constipation requires for its cure, properly regulated deep abdominal manipulations, systematised respiratory exercises and a correct carriage of the body—measures I personally use, and also advise and teach my patients to do the same. Deep abdominal manipulations and systematised respiratory exercises vigorously knead and squeeze the colon, whilst a proper carriage of the body places the respiratory muscles at the best mechanical advantage for correct breathing, and favours the brisk circulation of blood in the abdominal viscera—one and all factors of importance in promoting bowel activity.

Some twelve years ago I cured myself of constipation of many years' standing by learning to habitually hold myself in a properly erect posture, and taking steps to re-educate my respiratory muscles to perform their functions in an efficient manner.

Some eighteen months after the change I had thus brought about in myself, I found that my bowels again began to give me trouble. But shortly after bringing into use the dietetic method, I had no further trouble with constipation.

I still find, however, that if I am at all slack in taking my daily dose of respiratory exercises, or make careless departures from my usual diet, my old enemy returns to worry me. The moral of which, to me, is, "Don't be a slacker about exercises or careless with diet." But my experience, after all, is only the same as that of my patients.

The two most important factors in the prevention and cure of chronic constipation have, I think, now been sufficiently clearly dealt with, and I am sure that the aid of drugs or surgery would rarely be required if the measures I have placed before the reader are thoroughly and perseveringly applied.

ETHER AS AN ANÆSTHETIC.

BY J. B. H. HOLROYD, TEMPY. CAPT., R.A.M.C.

Anæsthetist, Colaba War Hospital and Sheffield Royal Hospital.

I APPROACH this subject with almost a feeling of fear and trembling in a country where chloroform has held the field for so many years, and but that I am so fully convinced of the relative value and safety of ether, either alone or in mixture, as compared with chloroform, I would have refrained from putting my observations on paper.

I was told that chloroform was the only anæsthetic that could be used in India, on the ground that ether evaporated too quickly and it was therefore impossible to keep the patient under. My own theory was, before I came out, that ether could be given in India quite as well and with the same gratifying results as in England. My results, as far as Bombay is concerned, have borne out the theory. My colleagues who have had experience with ether agree that this is so, both in Bombay, where the atmosphere is moist, and also in up-country stations, where the atmosphere is very dry and the temperature over 120 degrees. Further, apart from the proof of any theory, there are so many cases and conditions where pure chloroform is not only unsuitable but absolutely dangerous, *e.g.*, sepsis, anæmia either constitutional or due to hæmorrhage. It is also a well-recognised fact that pure chloroform in the presence of sepsis is very liable to produce acidosis; which is practically non-existent with ether or its mixtures.

The anæsthetic that I have used for some considerable time is a mixture of chloroform and ether 1:15, preceded by morph. gr. 1/6 and atropine gr. 1/150 given hypodermically half an hour before the operation.

The administration is carried out as follows. The patient's face is covered with a layer of gamgee tissue, in the centre of which is a hole large enough to expose the nose and mouth. A mask with sixteen layers of gauze is then placed on the pad. A few minims of Eau de Cologne are dropped on the mask in order to get the patient

accustomed to breathing a foreign vapour, which at the same time is pleasant to inhale. The mixture is dropped on the mask very gradually until tolerance is reached, after that it should be applied as quickly as possible as there is no point in prolonging the induction.

Complete anæsthesia is usually reached in four minutes. When unconsciousness is produced, I pass a rubber tube about the size of a No. 8 catheter through one nostril. This ensures a free air-way and obviates the use of tongue forceps and mouth-gag. I may say that since using this rubber tube I have never used tongue forceps or mouth-gag.

The administration should always be continued by constant dropping of the mixture on the mask and not by haphazard dosage with periods of rest between. It is quite easy to keep the patient under with pure ether after full anæsthesia has been induced by this method. Personally I never induce with pure ether: for two reasons, one being that it is not pleasant to inhale, and, secondly, the time of induction is much longer and consequently undesirable from the patient's point of view; and also a much greater quantity of ether is required.

The condition during the induction of anæsthesia and operation is quite satisfactory. Recovery is rapid. Vomiting is rare and then only slight. Bronchitis was absent in my series of cases. Ether clonus appeared in one per cent. of cases. I always make a point of seeing the patient five or six hours after the operation, and I am told that the induction is most pleasant. No feeling of choking or suffocation is experienced.

The return to consciousness is comfortable.

The conclusions I have arrived at are as follows:—

1. It is quite as easy to induce anæsthesia and to keep the patient under with the above method in India as in England.
2. The relative safety of the mixture as compared with chloroform.
3. The induction is rapid and pleasant.
4. The anæsthesia is easy and quiet.
5. The return to consciousness is rapid and comfortable.

6. The quantity of the mixture used is practically 9 ounces per hour. When pure ether is used the quantity is slightly increased.

I have used this method in Bombay for some months and find that my results are practically the same as those I obtained in England, with this exception that a little more anæsthetic is required, but the quantity is not appreciable. In my opinion climate makes very little difference if the mixture or ether is properly administered.

My thanks are due to Lieut.-Colonel H. E. Staddon, R.A.M.C., Officer Commanding Colaba War Hospital, for his kindness in allowing me to hand this paper for publication.

FEB., 1919.]

THE INDIAN MEDICAL GAZETTE ADVERTISER.

xxx

Recurrent Fever
SYPHILIS

GALYL

Framboesia and
Sleeping Sickness

Practical work with GALYL in the shape of

60,000 INTRAVENOUS (Dilute and Concentrated) and INTRAMUSCULAR INJECTIONS administered in Military, Naval and the principal General Hospitals throughout the United Kingdom, has demonstrated that this preparation is **more rapid and less toxic** in action than any compound of the "606" group, which accounts for the **consistently excellent clinical results without any undesirable by-effects.**

Forms:

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(1) **DILUTE.**—GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate, sterile distilled water only being used for the dissolution.

(2) **CONCENTRATED.**—A special outfit containing one dose GALYL, one ampoule sterilised solution, and one small filter is supplied.

Doses:

0.10—0.15—0.20—0.25—0.30—0.35—0.40

(3) FOR INTRAMUSCULAR INJECTIONS:—
GALYL is supplied in **OILY EMULSION.**

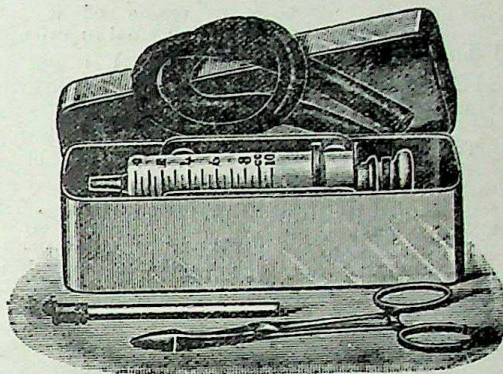
Doses:

0.10—0.15—0.20—0.30—0.40.

POCKET CASE.

Containing the entire instruments (sterilizable) necessary for administering a concentrated intravenous injection of GALYL or other solution.

- 1 India-rubber Tube for constricting the arm.
- 1 Clamp for fixing the rubber band.
- 1 Glass Syringe of 10 c.c. capacity.



- 1 Platinum-iridium Needle, length 4 cm., diameter 0.9, with short bevelled joint and special barrel. Attachable to the syringe without any additional junction.
- 1 Nickel-plated Case to hold all the above.
- 1 Chamois Leather Pouch.
- 1 Glass Filtering Tube, with rubber attachment.

Price complete 30/-

HECTINE

Formula: Sodil Benzo-sulpho-p-amnia-phenyl arsonas.

Dr. Mouneyrat—the discoverer of Galyl (the well-known and widely adopted French Neo-Salvarsan substitute) and also Hectine, a compound which—though it possesses a very low arsenic percentage and has proved most safe in use—gives remarkably successful clinical results in syphilis and the parasymphilitic affections. Hectine has a record of about one million injections.

Hectine is not only a specific in syphilis, but it acts as a general tonic in the treatment of bloodless and anæmic patients and in all cases where **Arsenic** is indicated.

In malaria it acts as a specific owing to its anti-parasitoid and anti-thermic actions; also in tuberculosis, rachitism, neurasthenia, asthma, chorea, skin diseases, etc., etc.

Hectine is supplied in hermetically sealed ampoules for intramuscular injections.

Ampoules A—containing 10 c.g. in 1 c.c.

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Pills (in phials of 24) 10 c.g.

HECTARGYRE

(Mercurial Salt of Hectine)

Hectargyre being a **double specific** cures syphilis and all its manifestations more rapidly and more surely than any other mercurial preparation.

As a treatment following Galyl, or *ab initio* in all stages of the disease, Hectargyre is very effective and rapid; it is well tolerated even where prolonged treatment is necessary; the most intractable cases of syphilis have yielded highly satisfactory results.

Hectargyre is supplied in sterile ampoules for intramuscular injections.

Ampoules A containing—

Hectine 10 c.g. } in 1 c.c.
Hg. 1 c.g. }

Ampoules B containing—

Hectine 20 c.g. } in 1 c.c.
Hg. 1½ c.g. }

Pills containing—

Hectine 10 c.g.
Protoid of Hg. 1 c.g.
Opium Extract 1 c.g.
(In phials of 24 pills.)

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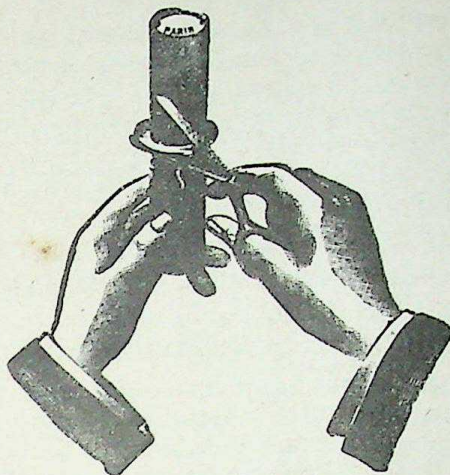
The Combined Treatment of SYPHILIS.**SUPSALVS****STABLE SUPPOSITORIES OF
"606" (of French Manufacture)**

Fig. 1.

Fig. 1 represents the special patent metallic envelope containing a Supsalv for hot climates. The projecting edge in the middle is cut by scissors—the two ends are then easily pulled apart. The envelope should first be immersed in cool or iced water for 10 minutes.

At the International Congress of Medicine Ehrlich stated that the biochemical action of "606" on spirochaetes is not direct but indirect, a third factor found in the body fluids being necessary.

This success is explained by the well-known experiment of Levaditi: "If living treponemas be placed in a solution of Arsenobenzol (Ehrlich's 606) they continue to live in it. But if a trace of extract of liver be added to the mixture the treponemas are destroyed."

"If 606 has to be taken up and transformed by the liver in order to become toxic to the treponema, there is no better mode of absorption of the drug than by way of the intestine, since all the veins of the intestines join the portal vein. If this be the case no route could be more indirect and more unsatisfactory for active treatment than one that is not intestinal or not intravenous (i.e., prehepatic), since some of the drug must necessarily become fixed everywhere before the passage through the liver has activated it."—Dr. Sabouraud, La Clinique (13-4-1913).

As a result of numerous clinical experiments, Dr. Bagrov, of Moscow, has arrived at the same conclusion, and recommends the rectal method of administration of 606.

200 cases were treated by the combined treatment in one of the London hospitals. In each case a negative reaction was attained.

Extremely Simple in Use.**No Ill-effects.****Most Satisfactory Clinical Results.****Rapid Absorption.****MERSALV****FOR MERCURIAL INUNCTION IN
CONNECTION WITH SUPSALVS
TREATMENT.**

CHEMISTRY.—"Mersalv" contains 10 per cent. metallic mercury, which by a special mechanical process exists in the minutest state of sub-division possible. It is a non-greasy preparation, and, in contra-distinction to other mercurial preparations, contains no organic fats or oils. "Mersalv" is of a white creamy consistence, of pleasant odour, and *cleanly in application*.

In Special Glass Stopped Bottles for Hot Climates.

IODOGÉNOL**IODINE in its Most Reliable and Palatable Form.**

IODOGENOL is a preparation containing Iodine in an organic, assimilable and one might almost say "living" form.

IODOGENOL possesses about 38 times the physiological activity of that of iodide of potassium. The preparation has, according to the clinical reports of eminent professors, succeeded where the usual iodide treatment had failed after producing undesirable by-effects.

IODOGENOL does not produce Iodism or other bad symptoms.

IODOGENOL is an undoubted digestive stimulant and promotes appetite and has a markedly beneficial effect on the general nutrition. It has been tried in many of the large hospitals, and given highly satisfactory clinical results in cases of

Syphilis, Rheumatism, the various phases of Tuberculosis, General Debility, etc.

20 minims of IODOGÉNOL are equivalent to 8 grs. Iodide of Potassium.

**The SCIENTIFIC TREATMENT OF MALARIA,
INFLUENZA AND ALLIED AILMENTS.****KINECTINE**

According to Dr. MOUNEYRAT, the discoverer of Galy and Hectine (the widely adopted Salvosan Substitutes).

FORMULA:

Chlorhydrate of Quinine c. Hectine—i.e., Benzo-sulfone-para-amino-phenyl-arsenate of Quinine.

Non-toxic, produces no ill-results.

Easily taken (tablets) and well tolerated.

Highly satisfactory clinical results.

Not only a Prophylactic against, but a Specific in, INFLUENZA, Catarrh, Coryza, Hay Fever, Malaria, etc.

H.M.S.—, 27-7-17.

SIR,—I enclose P.O. for the tube of Kinctine. The drug has given every satisfaction.

W. B. H. W., Surgeon, R.N.

The Anglo-French Drug Co., Ltd., Holborn, London, E.C.

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IODARGOL

Special Colloidal Iodine.
NON-TOXIC | **FOR THE TREATMENT** | **DIFFUSIBLE**
PAINLESS | of Gonorrhœa: Acute and | **ANTISEPTIC**
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Cystitis and the Serious Complications of Gonorrhœa.
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UTERO-TOPIQUE
IODARGOL. Direct Intra-
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These are introduced into the vagina and slowly discharge the Iodine, which penetrates deeply into the vaginal mucous membrane, giving rapid relief from congestion and pain. Destructive to the micro-organisms.

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IODEOL OVULES for Vaginitis, Metritis, etc.

IODEOL CAPSULES contain 4 grains of Iodine in each. Never cause Iodism.

More powerful and active than Iodine without its drawbacks.

The treatment of Carbuncles, Boils, Anthrax, Acne, Styes, and diseases arising from **STAPHYLOCOCCUS**.

STANNOXYL

*(An Oxide of Tin and Tin Meal
free from Lead.)*

A truly scientific production the value of which has been studied very closely. The effect is really wonderful; from the second day of treatment the pain is relieved and the carbuncles begin to dry up, those which are just opening are stopped in their course; the core is not expelled but reabsorbed.

In the majority of cases a complete cure is effected by the fifth or sixth day, it is seldom necessary to take the full 10 days' treatment, and relapses are unknown, indeed it is a specific for diseases arising from Staphylococcus.

The daily dose for Adults is 4 to 8 tablets;

Children, 2 to 4 tablets.

Supplied in vials of 80 tablets.

URASEPTINE

*The Most Powerful and Effective
Urinary Antiseptic.*

URASEPTINE is a granulated product entirely soluble in water, its bases being Piperazine, Urotropine, Helmitol, Benzoates of Sodium and Lithium. It contains 80 centigrams (10 grs.) of active matter to each teaspoonful. **DOSE.**—2—6 teaspoonfuls daily.

It purifies the Urine, and this action is due to its three principal properties:

1. It is a **URINARY ANTISEPTIC.**
2. A **SOLVENT** of **URIC ACID** and of **PHOSPHATES.**
3. A **MILD NON-TOXIC DIURETIC.**

INDICATIONS.—Arthritism, Gout, Gravel, Hepatic and Renal Colic, Rheumatism, Calculus, etc., Phosphaturia, Urinary Antisepsis, Pyelitis, Bacteriuria, Cystitis, Prostatitis, Urethritis, Pyuria, Urinary Abscess, Vesical Catarrh, etc.

ANTICONOCOCCIC



The clinical reports given by various doctors show that Rheantime gives highly satisfactory results, both in acute and chronic forms of Gonorrhœa and also in the various infectious complications due to Neisser's bacillus.

Rheantime is put up in hermetically sealed tins, containing 28 spherules. **Dosage.**—4 spherules a day.

Therapeutic Association of Paris (14th June, 1916): the result of their observations:—

"It is not a rare thing," write these authors, "to observe in the very first days a more or less marked recrudescence of the discharge. This negative phase, which, however, is temporary, is always followed by a well-defined positive phase, in the course of which the characteristics of the urethral pus undergo a rapid change; the discharge, which is at first thick, abundant, and creamy, passes gradually into the hyaline state, diminishes in quantity, and in the majority of cases ceases.

"Under the microscope these successive stages are demonstrated in equally definite stages; whatever may have been the duration of the disease, the characteristics of the pus become rapidly modified; after two or three days' treatment the gonococcus, first intracellular, becomes exterior; it ceases to act as a parasite on the polynuclear leucocytes and the large epithelial cells—one then finds them disseminated outside the leucocytes.

"Finally, some days later, if the administration of Rheantime is continued, the condition undergoes still further change, the gonococci become agglutinated, arranged in a mass, and finally bacteriolysed."

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Indian Medical Gazette.

FEBRUARY.

FULL PAY LEAVE.

THE revision of the civil leave rules for the European services has been under tacit consideration for the last eight years. Two Commissions have successively—we wish we could say successfully—tackled this question, which but for the War would probably have been settled two, if not three, years ago. The cessation of hostilities has again brought the subject into prominence, and signs are not wanting that some pronouncement cannot be long withheld. In questions under prolonged discussion there is always a danger that the primary objects in view may come to be overlooked, that the wood may no longer be visible on account of the trees; this question of European leave is no exception to the rule. Indeed we would go further and say that a stage has been reached at which there is an imminent danger of the perpetration of an error which may be irretrievable for a generation or more. This would be the greater pity, because such an unique opportunity very rarely presents itself of conferring a much-needed boon on all European services alike, and of removing a disability common to all, which has been seriously aggravated by the War. A really liberal handling of the question would make for contentment and increased efficiency and provide a stimulus to recruitment for years to come.

There are three distinct standpoints from which the question must be reviewed. In order of importance they are—

- (1) health and efficiency,
- (2) cost, and
- (3) administration.

The first is of *paramount* importance and it is in the disregard or forgetfulness of this fact that danger lies.

Now the ruling—or, as our American Allies would say, the bed-rock—reason for a change, is the indisputable insufficiency of the income of the large majority of officials when on half-pay furlough. In addition to school bills, life assurance premia, and the ordinary expenses of living, the cost of passages, travelling and other extraordinary expenses have to be met. Under the

present rules, this unusually heavy expenditure coincides with a fall in income of practically fifty per cent.

As action and reaction are equal and opposite, individual officials, according to their temperament or special circumstances, are driven to resorting to one or more of the following expedients. They either defer taking leave at the time it is desirable in the interest of efficiency; or they forego the annual holiday and accumulate privilege leave for use as full-pay furlough; or they take shorter leave than is really necessary; or in the last extremity *they are driven to borrowing*. A vicious circle is thus set up, as the repayment of the loan materially extends the interval until leave can be taken again. A tired and particularly a pre-occupied and anxious man can never do his work full justice. It is worry, far more than work, which kills. The net result may be summed up as impaired efficiency and indifferent work. We have set forth these facts in detail, because in the clash of interests and side-issues, their very existence is not only apt to be, but is too often actually, forgotten.

It is transparently obvious that an insufficient income can only be rendered sufficient by either reducing expenditure, or (when this is impossible) by enhancement. Therefore an unavoidable concomitant of any change is an increase in cost. But a set-off against this is the improvement of the quality of the work rendered in return, and not only the quality but also, as we shall see, the actual quantity. This again is rarely recognised and has never been given its full due.

Again, considerable retrenchments have been effected by the State from the deferment of leave in the past. Under liberalized rules these retrenchments will no longer be so great. This cannot fairly be described as an increase in cost, yet it is fallaciously reckoned as such. It will in reality be a surrender of savings, acquired through fortuitous circumstances at the expense of officials, and will therefore, strictly speaking, not be an increase in expense at all. Cost, then, is comparative only and in a still greater degree fictitious.

From an administrative point of view it is urged with much force that the permissibility of two years' leave at one time has long been an anachronism with the greater rapidity of travel, and that as a corollary the maximum amount of

leave possible under the existent rules is considerably in excess of average requirements. Though a minor consideration in comparison with the primary reason for change, it is fortunately true, because it affords a practicable solution *without seriously increasing the cost*. There are, however, limits to the extent by which furlough can be *safely* reduced, both in bulk and also at one time, and here again if due care is not exercised, it is quite easy in framing new rules to overstep them.

These general considerations serve as touchstone for testing the leave proposals which now hold the field. Whether these proposals are the last or indeed the only possible means to the end in view, is quite a different proposition. *En passant*, we may record our opinion that they are nothing of the kind, but as a matter of practical politics they are the only ones that are likely to engage official consideration, in the short time that is left for settlement, and therefore the only ones that are worth discussing. The proposals are as follows:—

By the Royal Commission—that (1) privilege leave may be accumulable up to four months in all, instead of three months as at present: and (2) the commutation of two years' half-pay furlough to one year on full pay, subject to the proviso that not more than three months' full-pay furlough may be taken at one time. In effect this means that in thirty years' service six years' half-pay furlough is reduced to five years, *i.e.*, four years on half pay *plus* one year on full pay; and that twenty-eight months' combined leave on full pay can be taken for exactly seven months on exactly four occasions at a cost of no annual holiday during the working intervals of nearly four years.

Two inferences are directly deducible from these proposals: (1) that the maximum continuous working period that is desirable is four years, and (2) that an annual holiday, if not absolutely unnecessary, is at all events not urgently necessary. Those who wear the yoke will hardly agree, and in our view this is a definitely retrograde step. But the Commission, in laying down the proposition that four years is the maximum optimum working period, have, at the same time, practically fixed it as the *minimum* or obligatory working period also. This is a very different thing; nor is it really necessary.

If both the total amount of commutable half-pay furlough, and also the amount commutable at one time, were increased, then the necessity for the accumulation of privilege leave to be used as full-pay furlough would, *pari passu*, disappear, thus rendering the annual holiday still possible. Herein lies the germ of truly liberalized rules to which we will recur.

Our main objection, then, to the proposals of the Royal Commission is that the annual holiday will become a thing of the past, with a grave risk of detriment to individual health and efficiency; and this as a result of an expedient for avoiding expense. The Commission, though moving in the right direction, *did not go far enough*.

The Government of India, instead of detecting and correcting this mistake, practically set the seal *on the abolition of the annual holiday*, by approving the limitation of commuted furlough to three months at one time. In addition, their suggestion of "the surrender of three times the amount of half-pay furlough" means that six years' half-pay furlough now available will be reduced to four years, *i.e.*, three years on half pay and one year on full pay. It is beyond the purpose of this article to criticize the morality of this proposal. Their suggestions are (with one great exception) apparently dictated by a desire to economize. We need only specifically refer to one more, *viz.*, the reduction of "last pay" to the "average pay of the previous three years," when privilege leave is taken out of India or utilised as furlough, in the interest, be it noted, of the public purse. This suggestion we frankly consider indefensible on moral or any other grounds whatsoever, and the more so because it will heavily penalize junior officers.

The great exception noted above is that the existing maxima of £1,000 and £800 per annum shall be abolished and no fresh maximum shall be imposed. This ultimate liability obviously will benefit the better-paid officials only and must necessarily add to the total cost. It no way helps the achievement of the primary object of the scheme. Its inconsistency might be allowed to pass if its ulterior consequences were negligible, but as the one stumbling-block to truly liberalized rules is the bogey of expense, this is not so. The suggested modifications being *promoted by Economy* (except in one astonishing exception) merely result in retrogression.

Well may officials exclaim "*We asked for bread and ye have offered us a stone!*"

Destructive criticism is valueless *per se*, unless it points the way to a solution. The accumulation of privilege leave up to four months should be granted for the sole purpose of affording (to a limited extent perhaps) the chance of short interim holidays. The chief means for providing adequately-paid furlough must be sought for elsewhere. The briefest consideration shows that the solution lies in a more liberal measure of commutation of ordinary furlough.

Under the Commission's proposals four years' half-pay furlough still remains. The commutation of half of this, *i.e.*, two years, to one year of full-pay furlough still leaves a balance of two years' half-pay furlough to be taken in thirty years' service.

Further minor provisions will be necessary from an administrative point of view, such as some restriction in the amount permissible at one time, some balance in hand, and a maximum limit to the full rate of furlough pay. These though undoubtedly necessary in practice are not integral conditions of liberalization, and their imposition should not be so restrictive in effect as to seriously hamper the grant of furlough at such intervals and in such periods as will really satisfy the requirements of rest and change.

Thus, the maximum limit may well be fixed at £2,000 per annum; the balance of ordinary furlough in hand at not less than six months; and the period of full-pay furlough permissible at one time at six months after, say, ten years' completed service, even if it be reduced to three or four months in the earlier years.

The proposal can be embodied in one brief rule thus:—

"The amount of furlough which can be earned shall remain as at present but four years may be commuted to two years on full pay; subject to the provisos (1) that the maximum rate shall not exceed £2,000 per annum, (2) that a balance of six months' ordinary half-pay furlough shall remain in hand on return from leave, and (3) that not more than four months' commuted or full-pay furlough shall be taken at one time, up to the end of the tenth year of completed service, and thereafter not more than six months at one time. Furlough thus commuted may be combined with any privilege leave at credit."

Taking £750 as the average furlough pay now due throughout service, the liability of

Government would not be increased by this solution, as the following calculation will show:—

Present liability	£ 750 × 6	=	£4,500
Future liability	£1,500 × 2	}	= £3,000 + £1,500
plus	£ 750 × 2		
			= £4,500

While, in return, two years' more actual service would be rendered and much better work done.

The net result would be a real liberalization of the present furlough rules, by which all services would benefit. We venture to commend it to the attention of the authorities who rule our destinies in this matter.

Current Topics.

WHAT WE KNOW OF INFLUENZA.

IN marked contrast to the amount of rubbish written on influenza is the following sober document issued by the Royal College of Physicians, which we print in full:—

PREVENTION AND TREATMENT OF INFLUENZA.

Memorandum by the Royal College of Physicians, London.

The following memorandum, adopted by the Royal College of Physicians of London on November 8th, has been issued.

Memorandum on Influenza.

In view of the alarming and contradictory reports of the present epidemic of influenza that have appeared in the public press, the Royal College of Physicians deem that an authoritative statement on the subject is desirable in the public interest.

The past few weeks have now afforded sufficient experience to permit some positive statements to be made. Though the epidemic shows signs of abatement in London, it is still severe elsewhere; moreover, its after-effects call for intelligent anticipation.

The present epidemic is virtually world-wide, irrespective of race, community, or calling. Similar world-wide epidemics occurred in 1803, 1833, 1837, 1847, 1890. The long intermission since the last widespread epidemic had already made an early reappearance probable, but the conditions of epidemic prevalence of influenza are too obscure to allow of precise prediction.

This outbreak is essentially identical, both in itself and in its complications, including pneumonia, with that of 1890. The disproportionate occurrence of a special symptom, a well-recognized phenomenon in the case of epidemics, as for example nose-bleeding in the present epidemic, does not invalidate this statement. The present epidemic has no relation to plague, as some have suggested.

Although there can be no question that the virus of influenza is a living organism, and capable of transference from man to man, yet the nature of the virus is still uncertain. It is possibly beyond the present range of microscopic vision. The bacillus discovered by Pfeiffer, commonly known as the influenza bacillus, has in the past been regarded as the probable cause, though on insufficient evidence. There is doubt as to the primary part it plays in the disease, important as a secondary infecting agent. Pfeiffer's bacillus, the pneumococcus, and above all in

this epidemic the streptococcus, seem to be responsible for most of the fatal complications of influenza.

Infection is conveyed from the sick to the healthy by the secretions of the respiratory surfaces. In coughing, sneezing, and even in loud talking, these are transmitted through the air for considerable distances in the form of a fine spray. The channels of reception are normally the nose and throat.

It is manifest that the closer the contact the more readily will this transmission occur; hence the paramount importance of avoiding overcrowding and thronging of every sort, whether in places of public resort, public conveyances, factories, camps, dwelling-rooms, or dormitories.

The sum of available evidence favours the belief that the period of incubation is about forty-eight hours or even somewhat less.

The dangers of influenza are gravely increased by the complications, and much can be done to avoid or to mitigate these. Such complications may develop insidiously, and without previous signs of severe illness.

Carefulness does undoubtedly decrease, and carelessness increase, both morbidity and mortality; it is important therefore that the public should have a clear idea of such measures of personal prophylaxis as are available against infection; larger measures of public health, administered by Government or local authorities, stand outside the scope of the present memorandum. The individual must be taught to realize and acquiesce in his duty to the community.

Well-ventilated, airy rooms promote well-being, and to that extent at any rate are inimical to infection; draughts are due to unskilful ventilation, and are harmful; chilling of the body surface should be prevented by wearing warm clothing out of doors.

Good nourishing food, and enough of it, is desirable; there is no virtue in more than this. War rations are fully adequate to the maintenance of good health, though they may not afford just the particular articles that each fancy demands. Alcoholic excess invites disaster; within the limits of moderation each person will be wise to maintain unaltered whatever habit experience has proved to be most agreeable to his own health.

The throat should be gargled every four to six hours, if possible, or at least morning and evening, with a disinfectant gargle, of which one of the most potent is a solution of 20 drops of liquor sodæ chlorinate in a tumbler of warm water. A solution of common table salt, one teaspoonful to the pint of warm water, is suitable for the nasal passage; a little may be poured in the hollowed palm of the hand and snuffed up the nostrils two or three times a day.

Since we are uncertain of the primary cause of influenza, no form of inoculation can be guaranteed to protect against the disease itself. From what we know as to the lack of enduring protection after an attack, it might in any case be assumed that no vaccine could protect for more than a short period. But the chief dangers of influenza lie in its complications, and it is probable that much may be done to mitigate the severity of the affection and to diminish its mortality by raising the resistance of the body against the chief secondary infecting agents. No vaccines should be administered except under competent medical advice.

No drug has as yet been proved to have any specific influence as a preventive of influenza.

At the first feeling of illness or rise of temperature the patient should go to bed at once and summon his medical attendant.

The early stages of an attack are the most infective, but infection may persist throughout the illness, and segregation should be maintained at least till the temperature is normal.

Relapses and complications are much less likely to occur if the patient goes to bed at once and remains there till all fever has gone for two or three days: much harm may be done by getting about too early.

Chill and over-exertion during convalescence are fruitful of evil consequences.

The virus of influenza is very easily destroyed, and extensive measures of disinfection are not called for. Expectoration should be received when possible in a glazed receptacle in which is a solution of chloride of lime. Discarded handkerchiefs should be immediately placed in disinfectant, or, if of paper, burnt.

The liability of the immediate attendants to infection may be materially diminished by avoiding inhalation of the patient's breath, and particularly when he is coughing, sneezing, or talking. A handkerchief should be held before the mouth, and the head turned aside during coughing or sneezing. The risk of conveyance of infection by the fingers must be constantly remembered, and the hands should be washed at once after contact with the patient or with mucus from the nose or throat.

Each case must be treated, as occasion demands, under the direction of the medical attendant.

No drug has yet been proved to have any specific curative effect on influenza, though many are useful in guiding its course and mitigating its symptoms.

In the uncertainty of our present knowledge considerable hesitation must be felt in advising vaccine treatment as a curative measure.

A period of enfeeblement following an attack of influenza should never be disregarded, as it is apt to mask the presence of other morbid conditions.

London, November, 1918.

QUININE PRODUCTION IN BENGAL.

THE following extract from the Annual Report by Lieutenant-Colonel A. T. Gage, I.M.S., is reproduced in full as it shows well the present state of affairs on the Bengal Cinchona plantations:—

Cinchona has so far been calculated only on forest soil. A plantation starts by destroying forest and continues its destruction so long as the plantation extends. The cost of the destruction is a financial charge against Cinchona, but so far the value of the forest has been ignored. The alternatives are, either to debit the value of the forest against Cinchona, or for the Cinchona Department at its own expense to re-afforest as opportunity allows. The second is much the better. The first alternative allows the department to leave an area finally cleared of Cinchona to become the prey of useless jungle plants. The second ensures replacement of the original forest by one at least as valuable and serves to recuperate the soil and fit it again for Cinchona after a lapse of years. Neglect of re-afforestation except for trivial acreages planted with fuel trees for factory use, combined with other factors, had reduced Mungpoo plantation, after forty years of existence, in the main to a lamentable condition. Pre-occupation with the extension of the factory (1905-1907) delayed dealing with the condition until 1907-1908, when re-afforestation was started. Since that year, from 150 to over 360 acres have been re-afforested annually, the total acreage now being 2,838 on Mungpoo with nearly 2,600,000 trees and the total cost Rs 2,37,503. The blocks have been planted with a mixture of timber and fuel trees of mixed species of each class, the classes and species being mixed, partly that the quick-growing fuel trees might act as "nurses" to the slower growing timber trees, the fuel trees being cut out for factory use when their removal would be for the benefit of the timber trees, partly to lessen the risks of the general injury to blocks by pests or blights, partly to recuperate more effectively the soil than solid planting of single species would be likely to do. For the first few years a block requires only ordinary silvicultural attention. The result of ten years' work has been satisfactory. The older blocks have a beautifully even appearance,

and the whole is now one of the finest pieces of afforestation in India. As an indication of the growth it may be stated that the average height of 9-year old Birch and Alder trees is nearly 70 feet with a girth of 2 feet. Lest it be thought that the officer responsible for initiating the scheme is not the best qualified to express an opinion on its success, it may be mentioned that the most practical, and a highly appreciated, testimony to the work comes from the Forest Department. It has now become practically an annual custom for the Conservator of Forests, and as many of his Deputies as can arrange, to spend a few days in seeing the work, and for the local Forest Officers to bring their subordinates and the Instructor of the Kurseong Forest School to bring his pupils for instruction. The carrying out of the scheme has been entrusted from its beginning to Mr. P. T. Russell, now manager of the Mungpoo plantation, and he deserves the greatest credit for the admirable work he has done.

Turning to Cinchona, both plantations are comparatively immature, for all the acreages (625) planted on Munsong up to 1909 have been cleared, and of the 2,060 existing, 1,787 are less than six years old, while 338 of the 454 on Mungpoo are also less than six years. The change from relying largely on Java bark to a policy of large plantation extensions did not come in time to counteract entirely present conditions, in which Java bark cannot* be purchased, and it will be two or three years yet before the present acreages will be old enough to supply enough bark to keep the factory working at full capacity. The cultural conditions of both plantations are satisfactory, but Munsong is finding great difficulty in obtaining sufficient labour. Owing to this and the present impossibility of increasing the staff in proportion to the increase of acreage, Mr. Green, the manager, and his assistants are bearing a very heavy burden of work, which they are doing ungrudgingly and very well. For reasons mentioned, the factory has been working at an economic disadvantage, which will disappear as more plantation bark becomes available. As the Assistant Quinologist has been on military service since 1916, a heavy strain has fallen on Mr. Shaw in having to perform single-handed both ordinary factory and analytical work. The importance of his work and its competent performance need no emphasising.

Stock account and quinine reserve.—The value of stock is taken at Rs. 18,22,396-7-7. The great demand has reduced the reserve from 165,000 lb. at the end of 1915-16 to 63,248 lb. 12 oz. at the end of 1917-18.

The actual cost is only Rs. 7-4 to Government, and the *wholesale* price has been recently Rs. 26-8.

The following note on the cultivation of other drugs is of interest:—

Ipecacuanha.—This species has been in existence on Mungpoo for many years, but until recently there was no encouragement to extend its cultivation. The experience of the last few years however having shown the undesirability of relying entirely on external sources for supply of emetine, renewed attention has been given to its cultivation. It is a troublesome species to cultivate in the latitude of Mungpoo, and much time and care have to be expended on it. The stock at Mungpoo has recovered to a great extent from the set-back experienced in the winter of 1916, and there are now about 55,000 plants in stock.

Digitalis purpurea.—Over 100 lb. of dried leaf is now available at Mungpoo. About 30,000 plants have been put out to provide leaf in the spring of 1919.

Chenopodium ambrosioides and *C. anthelminticum.*—Large extensions of these species are being put out on Mungpoo to provide seed for extraction of the oil used in the treatment of hookworm disease.

Belladonna.—Arrangements are being made for the cultivation of this species on a considerable scale at Mungpoo.

BACILLARY DYSENTERY.

THERE are fashions in medicine as in millinery, and they are at times followed with equal lack of commonsense. It is established that emetine will cure amœbic dysentery, but no one ever claimed it to be of any special value in ordinary bacillary dysentery; but emetine is fashionable, and we consequently find it used unnecessarily in all sorts of ordinary attacks of dysentery which could be "cured" by rest in bed, suitable diet, and castor oil or epsom salts.

We are glad, therefore, to see an able article in the *Quarterly Journal of Medicine* (Clarendon Press, Oxford) by Drs. P. Bahr and J. Graham Willmore, in which they demolish a paper by Capt. Bartlett on dysentery among troops in the Mediterranean Expeditionary Force.

We quote the following conclusions:—

1. That amœbic dysentery always is, and always was, endemic and sporadic, not epidemic, and requires, as a rule, conditions peculiar to tropical and sub-tropical countries for its propagation.

2. That the position of bacillary dysentery of specific bacterial origin, as regards its clinical signs, its ætiology, and its pathology, is so well proved that it cannot be relegated to the realm of "*inflammation secondary to amœbiasis*." Bacillary dysentery is generally a rapidly fatal disease in its acutest form, while the course of an amœbic infection is almost invariably a long one.

3. That all epidemics of dysentery among troops in the field are due to specific dysenteric bacilli; *their spread is due mainly to flies*, infected food, drink, and it may be to carriers of the bacillus.

4. That bacillary dysentery may be, and often is, responsible for as many casualties as the more concrete dangers of war, and as a cause of disability has taken the place of enteric in former wars.

5. That while cases of amœbic dysentery undoubtedly do occur, either alone or co-existent with some other infection such as enterica or bacillary dysentery, they are not sufficiently numerous to warrant the indiscriminate injection of emetine into every patient showing signs of diarrhœa or dysentery. *Its administration should be restricted to cases of amœbiasis definitely diagnosed by a competent microscopist.* Of course ipecacuanha and its derivative emetine, given in suitable doses over a sufficiently long period, *we recognize as specifics for amœbic dysentery.*

6. That all cases of diarrhœa should be diagnosed "dysentery" on clinical grounds as soon as the medical officer satisfies himself that they are passing blood and mucus; such a man is a source of infection to his fellows and he should be removed from them at once without waiting for the pathologist's report.

7. That at least 95 per cent. of the cases now occurring among white troops are of bacillary origin. Consequently all cases should receive at the earliest possible opportunity, independently of a laboratory report, treatment directed against the bacillary, and not against the amœbic, form of the disease.

The routine administration of the aperient sulphates, and to the serious cases antitoxin in massive doses, as early as possible, should be adopted in all cases of clinical dysentery in the place of emetine.

Preparations of bismuth and opium as a routine treatment are, in our opinion, definitely contra-indicated in both diseases.

* Most of the quinine purchased from Ceylon, India, and Java within the last few months.—ED., I. M. G.

Even if a case turns out not to be bacillary, the serum will do no harm and the salines will do good; on the other hand, *emetine*, by reason of its depressant properties and by the blind faith it inspires in its administrators, is, in our mind, harmful to all cases of bacillary dysentery.

ANTI-HOOKWORM WORK IN SIAM.

WE have received the report for the third quarter of 1918 (ending 30th September), of the work on the eradication and control of uncinariasis or hookworm infection in Siam.

In view of the endeavours now being made in India to enlist the co-operation of the public in this important work, it is worth while noting what has been done in Siam.

In the twelve months ending with 30th September, 1918, no less than 27,920 persons were examined and no less than 21,397, or over 75 per cent., were found infected.

The following tables are of interest:—

RE-EXAMINATIONS AND CURES.

	YEAR 1917.		YEAR 1918.		
		1st Quarter.	2nd Quarter.	3rd Quarter.	TOTAL.
Number re-examined					
After treatment ...	1,197	602	548	1,476	3,859
For confirmation ...	315	100	64	56	535
Total re-examined ...	1,512	702	612	1,532	4,394
Number found to be cured...	1,000	404	388	835	2,627
Number remaining infected	197	198	196	709	1,300

TREATMENTS ADMINISTERED.

	YEAR 1917.		YEAR 1918.		
		1st Quarter.	2nd Quarter.	3rd Quarter.	TOTAL.
Number given first treatments for hookworm ...	4,842	2,587	4,152	4,262	15,843
Number treated for other parasites ...	573	385	543	489	1,990
Total first treatments for all parasitic causes ...	5,415	2,972	4,695	4,751	17,833
Number given second treatments ...	150	139	59	207	555
Number given third treatments ...	10	16	4	7	37
Number given fourth treatments ...	—	—	1	—	1

Physical benefits following treatment.

One evidence that great physical benefit follows the freeing of people from hookworms is in the opinion of the people themselves. The fact that large numbers continue to apply for treatment shows that people generally realize the benefits of treatment. This is borne out also by the large numbers of individuals who have recovered health and been restored to usefulness. However, the benefit of freeing infected persons from hookworms has been shown graphically by Hluang Boriraksha, of the Army Medical Service. He weighed his cases before treating, and a year after treating. By comparing the weights of men treated and of men found infected but not treated, he found a most remarkable difference. Thus, 69 men found infected and given one treatment with 50 grains of thymol gained on the average 4·8 kilogrammes in weight, while 69 men who were found infected but were not given treatment gained on the average only 0·5 kilogrammes.

CHENOPODIUM IN AMŒBIC DYSENTERY.

DR. M. E. BARNES and Dr. E. C. Cort of Chiangmai, Siam, have published a preliminary report on the value of oil of chenopodium in the treatment of amœbic dysentery, as experienced in the course of anti-hookworm work in Siam under the Rockefeller Foundation.

The patients in the cases reported were ambulant, but suffering from dysenteric stools, with the exceptions already noted. No cases of fulminating amœbiasis were treated by this method.

A careful perusal of current medical literature, however, shows that physicians working in tropical countries are apparently not satisfied with emetine. While excellent results have been obtained with it, it is by no means atoxic, and untoward symptoms and even deaths have been attributed to its administration. Moreover, there are cases of amœbiasis which fail to respond to the emetine treatment.

METHOD OF TREATMENT.

In light cases a saline was given before the chenopodium was administered, followed within an hour by 1½ ounces of castor oil. In more severe cases, the preliminary saline was omitted, and 2 c.c. of the oil of chenopodium were administered in 1½ ounces of castor oil at a single dose. In other cases the oil of chenopodium emulsified with gum acacia was administered by rectum. In such cases the anal mucosa must be protected with petrolatum, and it is well to terminate the injection with 2 ounces of an inert oil. The buttocks should be elevated, the enema given slowly and with great care, the first dose not exceeding 8 ounces in the adult. This enema should be retained for an hour, if possible. If the parts are well protected with petrolatum, the patient does not suffer from the intense burning sensations which would otherwise accompany the expulsion of the enema. In practically every case, after treatment by one of the foregoing methods, there was marked improvement in the condition, as blood and mucus disappeared from the stools on the second day after treatment. In a few cases, as will be noted in the case reports, this improvement was not evident or was only temporary.

After reading Walker and Emrich's article on the effect of oil of chenopodium on amœbic cysts, we administered the treatment to two patients in whom cysts were found, with the results indicated in the case reports. In one of these cases, chloroform was included in the treatment as recommended by Walker and Emrich, but on account of some unfavourable symptoms we have not used it in other cases.

CONCLUSIONS.

1. Oil of chenopodium relieves promptly the clinical symptoms in many patients with chronic and subacute amœbic dysentery.
2. Oil of chenopodium administered by mouth or by rectum possesses marked power as an amœbicide, as is shown by the rapid disappearance of amœbas from the stools, following its administration.
3. There is a tendency to relapse in some cases, but in our series this is not greater than with the use of emetine.
4. The oil of chenopodium may be safely administered, when combined with castor oil in a single dose.

STONE IN THE BLADDER AT JAIPUR.

THE Mayo Hospital, Jaipur, for many years past has been known as a great "Stone" hospital, and the following extract of the report written by Dr. Dalgun Singh Khanka, M.B., Rai

FEB., 1919.]

THE JAIPUR MAYO HOSPITAL.

67

Bahadur, shows the work done in the year 1917:—

65 operations were performed for vesical stone by litholapaxy on 63 patients with 2 deaths.

53 cases were amongst Hindus and 12 occurred in Mohamedans.

28 cases belonged to Jaipur City, 30 to Jaipur District, 1 to Tonk, 2 to Jodhpur (Marwar), 2 to Nabab (Sirmoor State) in Punjab and 2 to Kohat. 27 cases were in males, 35 in male children and 3 in children.

The different ages of the patients were as follows:—

5 years and under	...	...	25
6 " to 10 years	...	...	16
11 " " 20 "	...	...	3
21 " " 30 "	...	...	7
31 " " 40 "	...	...	3
41 " " 50 "	...	...	3
51 " " 60 "	...	...	7
61 " " 70 "	...	...	1
Total, 65			

Durations of symptoms varied from 15 days to 7 years.

Crushing varied from 1 minute to 90 minutes and washing from 1 to 3 minutes.

The largest stone weighed 1,560 grains and was composed of urates.

Average time of crushing was 16.63 minutes and washing 7.43 minutes.

The average stay after operation was 2.62 days.

The longest time, 90 minutes, taken in crushing was in a Hindu male, 50 years old, who had a stone weighing 1,440 grains composed of urates, and the longest time of washing was 30 minutes in a Hindu male, 30 years old, who had a stone weighing 420 grains of urates.

Composition of stones:—

Urates	...	...	...	28
Phosphates	...	...	...	27
Oxalates	...	...	...	6
Phosphates and oxalates	...	...	...	3
Urates and oxalates	...	...	...	1
Total, 65				

The size of "Lithotrite" varied from 5 to 15:—

Lithotrite	No. of cases.	Lithotrite	No. of cases.
No. 5	20	No. 11	1
" 6	9	" 12	16
" 7	2	" 14	2
" 8	11	" 15	2
" 10	2		
Total, 65			

THE DANGERS OF LICE (*PEDICULUS HUMANUS*.)

PROF. G. H. F. Nuttall has a useful article on the *Pediculus humanus* in *Parasitology* (Vol. XI), from which we extract the following (*vide also Medical Officer* of 19th October, 1918):—

Lice are generally considered as belonging to two groups—*Pediculus corporis* and *Pediculus capitis*, but "body lice and clothes lice (are) regarded as at most merely racial forms of the species *Pediculus humanus* Linnaeus." Almost the whole poorer population in some countries is permanently infested with *Pediculus*. Historical evidence points to lousiness having been very general in all classes of European society in former times, and even in comparatively recent years the proprietor of one of the best hotels in Berlin informed Professor Nuttall that "he always sought to exclude even the highest nobility among the travellers from some countries because they so frequently infested his guests' beds, thus necessitating a formidable process of de-lousing, which took away much of the pleasure of their sojourn entailed." In our schools the proportions of

children found to be infected with *Pediculus capitis* were:—

	Boys	Girls	Infants	Total
1909	16.3	50.3	26.4	30.1
1917	7.8	28.5	13.5	15.5

An interesting observation by Sobel (of New York) is that negroes are less infested than whites, and that also the houses of negroes are mostly cleaner than those of alien whites, and, further, that negroes appear to take more care of their children's hair.

EFFECTS OF PEDICULOSIS.

In addition to the mental and moral effects of infestation with lice, there are other objectionable and dangerous results. The primary effects are slight transitory pricking sensations with varying after-results—restlessness, lack of sleep, irritability, anaemia and general debility—but a tolerance to the presence of lice can be acquired in a relatively short time by some individuals. Subsequent effects of the activity of lice are:—

- Urticaria (nettle rash).
- Eczema (moist tetter).
- Cutaneous pigmentation.

Skin diseases which may be spread by lice acting as mechanical carriers are:—

- Pavus (a disease of the hair follicles).
- Pityriasis (disease of the skin due to fungus).
- Impetigo contagiosa (scald head).
- Furunculosis (boils).

Diseases which may be spread by lice as "specific" carriers:—

- Typhus fever (gaol fever), by bite or crushing.
- Trench fever, by excreta of lice.
- Plague.
- Relapsing fever, by crushing.

Very serious outbreaks of typhus fever—notably in the Serbian army—have occurred from time to time, and lice are invariably present in connection with such outbreaks. The destruction of lice upon a patient renders him innocuous.

"The treatment at present recommended in this country for the remedy of pediculosis in the head is as follows:—

1. The application of mercury ointment at night to kill any larvae and adults.
2. Washing of the head with soft soap and thorough rinsing with water in the morning, to remove dirt and ointment.
3. Soaking the hair with equal parts of vinegar and warm water for half an hour, with the object of loosening the nits.
4. Picking up the hair in strands and pulling the nits down the hairs and off at the tips, either with a very fine tooth-comb, dipped in the vinegar from time to time, or with a piece of linen similarly moistened and held firmly between the thumb and finger."

* * * * *

1. As a first step in combating lousiness, it is essential to teach men what lice are and to tell them the harm lice may do.

2. Cleanly habits—including care of the head—will prevent infection.

3. One must not be deceived by the feigned appearances of death that lice may assume.

4. Useful remedies for lice in the head are:—

- (a) Acetic acid, for removal of nits.
- (b) Alcohol, with or without camphor.
- (c) Benzine and xylol (highly inflammable).
- (d) Carbolic acid solution, pomade and oil.
- (e) Chloroform water.
- (f) Sublimate vinegar.
- (g) Salome pomade.
- (h) Oleate of mercury and vinegar.

- (i) Oil of sassafras (objectionable from smell and soiling pillows, etc.).
- (j) Oil of turpentine.
- (k) Balsam of Peru with or without sulphur.
- (l) Petroleum or petroleum vinegar (smell objectionable).
- (m) Veratrine ointment.
- (n) Staveacre oil or ointment.

THE DEFICIENCY THEORY OF BERI-BERI.

IN the *Quarterly Journal of Medicine* (Clarendon Press, Oxford) Dr. F. M. R. Walshe has a valuable article in which he writes:—

A consideration of the deficiency theory of the origin of beri-beri in the light of recent clinical and experimental work makes it clear that the present hypothesis, which postulates a single negative factor, namely, the absence of a specific "accessory food factor" or "vitamine," is inadequate. It conflicts with the results obtained in starvation experiments on fowls. Starved fowls live sufficiently long to develop the disease (polyneuritis gallinarum) under such conditions, yet they die without developing it, although in this essential respect, namely, the deprivation of "vitamines," starvation is the equivalent of an avitaminic diet.

The use of "certain special diet" (Holst) is found to be an essential condition of the production of the disease both in man and poultry.

It is apparent from all recent experimental work, both in man and poultry, that there are two factors in the production of beri-beri: (1) the absence of an "accessory food factor" or "vitamine"; (2) the use of certain foods which are the direct and immediate cause of the disease.

There is a considerable weight of evidence to prove that carbohydrates constitute this second direct and immediate factor. It seems probable that in the absence of their specific "vitamine" they undergo an aberrant hydrolysis with the production of toxic by- or end-products thus producing beri-beri. Viewed in this light the disease is an intoxication. The facts regarded as excluding a toxic origin of beri-beri do not exclude an intoxication in this sense.

From another point of view, it may be questioned whether the clinical and pathological characters of the disease are compatible with the theory that it is a slowly progressive diffuse degeneration of the nervous system. The striking symptoms of beri-beri and the widespread visceral and nervous changes seen *post mortem* cannot be adequately accounted for by such an hypothesis.

A consideration of the physical and chemical properties of "vitamines"—as far as they are known—suggests the probability of their belonging to the class of bodies known as enzymes, and thus are concerned, we may suppose, in the hydrolysis of carbohydrates.

Certain observations of Holst and Fröhlich, showing that a diet of decorticated rice or barley may produce either polyneuritis or scurvy according to whether fowls or guinea-pigs are employed, throw some doubt on the separate identity and specificity of "anti-neuritic" and "anti-scurbutic vitamins."

Finally it seems certain that until the physical chemistry of the "vitamines" and the metabolism in beri-beri—both totally unexplored fields—have been more fully investigated, the pathogenesis of beri-beri will remain in part obscure. All we can say is that the theory which regards the absence of "vitamines," acting by producing a slowly progressive diffuse nervous system degeneration, as the sole and direct cause of beri-beri is both inadequate to explain all the facts and is incompatible with certain of them.

The genesis of the disease may be best expressed by saying that the use of certain food-stuffs, probably carbohydrates, in the absence of their "accessory food factors" or "vitamines," directly causes beri-beri.

TREATMENT OF INFLUENZA.

WE have been deluged with letters (too often almost illegible and written on scraps of paper) on the subject of the treatment of cases of influenza or "war fever" as some of our correspondents childishly call it following irresponsible writers in the daily press.

If we are to judge by our correspondence there are many "specifics." A well-known medical officer pins his faith on laudanum (5m.), tincture of belladonna (5m.) with camphor water—it is "nothing short of a specific" he tells us, but it must be taken at the onset of the attack—when by-the-bye it is not at hand. Another writes of the value of chlorate of potash and quinine, and adds that digitalis is "to be given in cases having a weak heart."

Another writer swears by iodine, one-drop doses of the *tinctura iodi fortis* with one drop of chloroform. If pneumonia has set in he prescribes camphor, ipecac., creosote and several other drugs in one fell mixture. For "home treatment" the same writer prescribes ginger, jaggery, betel-nut, black pepper, "in every stage of the disease." The only wise remark in his letter is on the necessity of good ventilation. He ends his letter by saying that the mixture containing chloroform and iodine is a "specific for the disease," and he gives us a list of persons from station-masters to maharajahs who can certify to its virtues. A doctor from Benares recommends iodine and belladonna. From Upper Burma comes a long printed letter prescribing (again) iodine and chloroform, vinum ipecac., and he tells us that his iodine mixture is a "specific." He also wisely emphasises the need of ventilation and as preventive measures eucalyptus, camphor and the chewing of cinnamon, and in pneumonic cases creosote, which he prescribed with success as the result of a dream!

All this goes merely to prove that there is no specific for the disease,—early rest in bed and treatment of symptoms is what is needed; but it also shows the profound belief of Indian practitioners in drugs, forgetting the eternal fallacy, *post hoc* is not necessarily *propter hoc*. See the statement put forth by the Royal College of Physicians (quoted on p. 25).

THE *Journal of the Royal Naval Medical Service* (October, 1918) contains an article by Deputy Surgeon-General P. W. Bassett-Smith, C.B., C.M.G., F.R.C.P., on the use of what is called "Torried meal" in the treatment of dysentery.

It has been introduced by M. Large of Mendon, and it is claimed that by its exclusive use cases of intermittent dysentery would be cured in a few days, because by the use of this prepared meal fermentation would be prevented. The "torrification" converts the starch into dextrin

and the gluten of the flour into peptones, and it is therefore easily assimilated. It has also been used in cases of infantile diarrhoea.

Cases have been so treated in the Royal Navy and the results of the clinical trial have been favourable. As the food alone contains no antineuritic properties, Deputy Surgeon-General Bassett-Smith recommends with it the issue of oranges or fresh lemon juice. No mention is made as to where this "*Torrified meal*" is to be obtained.

THE *Review of Applied Entomology* is the name given to a publication issued by the Imperial Bureau of Entomology (89, Queen's Gate, London, S. W. 7), and just in the same way as the *Tropical Bulletin* it gives extracts from papers in various scientific journals on all new work done on entomology.

THE November issue of the *Journal of the Association of Medical Women in India* (Vol. VI, No. 4) contains several articles of interest. Dr. K. O. Vaughan writes on the now-much-discussed subject of the improvement of childbirth conditions in India. Miss Ida Scudder, M.D., the Principal of the Vellore Medical School for Women, describes the work of the school opened in July last. This school is the third of its kind in India, and will be of special use to the women of South India. It is at present only intended for the training of sub-assistant surgeons, but hopes in time to teach up to the University standard. We may therefore hope that the training of women for medical work will reach the standard required.

IN *The Annals of Tropical Medicine* (October 31, 1918), Lieutenant-Colonel J. W. W. Stephens continues his elaborate and valuable studies in the treatment of malaria and has brought out the curious fact that "the season at which treatment for malaria is given influences the results obtained, and there is no doubt that . . . the same treatment if carried out on different occasions may give quite dissimilar results."

Broadly speaking "a very small percentage of cures is obtained in the winter and spring (January to April) and a comparatively high percentage in the summer and autumn."

Has any of our readers noticed anything like this in India?

LADY ROGERS has issued an appeal for the *Indian Nurses' Hostel Fund*. The need for well-trained Indian nurses for Indian families is well known, and so Lady Rogers' appeal is made especially to the Indian public. The proposed hostel will prove a home for the nurses when they have finished training, and they will be able to

paid a monthly salary and have free board and lodging while not employed on cases.

The wealthy portion of the Indian community in Bengal have now a grand opportunity of helping themselves and their countrymen and women.

Lady Rogers writes:—

WHAT IS THE HOSTEL SCHEME?

It is proposed that a house should be rented in a suitable neighbourhood in the northern part of the town, which will form a home where those nurses can go to live after they pass out from the hospitals. This will admit of a start being made with a limited number of nurses. They will be under the care of an English Lady Superintendent, who will be responsible for the comfort and general management of the hostel. The necessary kitchen arrangements will be made for Hindus and Mahomedans.

The nurses will receive a salary each month (whether at a case or not) and a bonus on cases attended during the year. As a means of saving for the later years of their life, a Provident Fund will be established when funds permit. Nurses will have free board whilst living in the hostel and medical attendance, if necessary.

All nursing fees will be paid direct to the Lady Superintendent: thus the money earned by the nurses will help towards the upkeep of the hostel. Doctors will be able to obtain nurses direct by telephone from the Lady Superintendent, who will despatch nurses, if available, to their destinations.

The war has brought home to the people of India the need of becoming self-supporting in every way, and especially is this necessary in the case of Indian nurses, as European nurses are likely to be required for the hospitals in Europe and elsewhere, and will not, therefore, be available for India in such large numbers as they have been in the past; the necessity, therefore, of training and raising the standard of Indian nurses is for this reason the more urgent.

Reviews.

"Hints to Dressers.—By Lt.-Col. SAMUEL ANDERSON, I.M.S. Second Edition. Calcutta: Thacker, Spink & Co., 1918.

WE are glad to see a new and revised edition of this useful little book. When it was published some eight years ago we gave it a cordial welcome, and we can now say that the second edition is a distinct improvement on the first. It is intended for the use of students and for the so-called "dressers" and "compounders" of the mofussil civil hospital, and is certainly destined to be useful to them.

Surgical technique is a progressive art, so we find many new methods, especially those found out or found useful during the war, described. The rules for aseptic surgery are good, and the preparations for an operation well detailed. Directions for making all sorts of lotions and dressings are given, including *Eusol* and Dakin's *Solution*. The care of instruments, catheters, ligatures, making of gauze dressings, saline solutions, irrigation bandages, treatment of operative wounds, septic wounds, burns, ulcers,

enemata, and hints on eye surgery are among the many subjects dealt with in this little book.

The Hæmatologist's Aid to Memory.—By H. H. SCOTT, M.D. London, 1918. John Bale Sons & Danielson. 5s.

THIS is a huge chart, apparently intended to be hung on a wall, in which the blood contents are tabulated under various headings, *viz.*, name of cell, size, shape, cytoplasm, astrosphere (an absurd term) size, shape, position of nucleus, chromatin, nucleolus, etc., etc. In addition there is a diagram or "schema" to show the regenerative changes in a pathological blood picture, and "blood pictures" of diagnostic significance, with notes, memoranda and glossary; and that a glossary is necessary is clear when we find the chart using such jawbreakers as "stabkernige," "anisocytosis," "isohypercystosis," "paraplasma," "aleukæmia," "caryorrhesis,"—how silly it is to invent these ponderous Greek terms for a generation which has not even learnt the Greek alphabet in its school days.

Lessons on Massage.—By MARGARET D. PALMER Fifth Edition. Demy 8vo. Pp. 340. London, 1918. Baillière, Tindall & Cox. 10s. 6d. net.

THE first edition of this book only appeared in 1901, and we have now the fifth edition before us. The new edition has been thoroughly revised, and various additions made. There is an especially good and well illustrated chapter on bandaging. Other additions are a chapter on wound treatment, and one on Swedish remedial gymnastics, which is certainly useful and well arranged.

We can thoroughly recommend this valuable book as the best guide book to the practice of massage.

The Twin Ideals.—By Sir JAMES W. BARRETT, K.B.E., M.D., F.R.S. London, 1918. H. K. Lewis & Co. 2 vols.

THIS is a remarkable collection of miscellaneous writing by Sir James Barrett, who is well known to those who have during the war served in Egypt, where he held the post of A. D. M. S. of the Australian Forces.

The book is a strange miscellany, and the majority of the essays are well worth reading. The many-sidedness of Sir James Barrett will be seen from the mere enumeration of a few of the essays in these two interesting volumes, *e.g.*, the future of Melbourne University, the new medical curriculum, students as soldiers, three essays on degrees in divinity, manual training, state education, the hospital problem, abolition of venereal diseases, milk institute, garden cities, problems of rural life, Sunday night music, music at Bayreuth, the track of explorers, imperial consolidation, science and industry, a lecture on India, and the Navy and the world's peace.

Every one of this infinite variety of subjects is treated in an eminently readable way and leaves the reader impressed with the zeal and enthusiasm of this many-sided man.

Diabetes and its Diabetic Treatment.—By Major B. D. BASU, I.M.S. (ret'd.) Ninth Edition. Panini Office, Allahabad. Re. 1-8.

THIS is the ninth edition of Major Basu's well-known book on diabetes and its treatment. Since its first publication in 1909, we have several times brought it to the notice of our readers, and the favourable view we took of previous editions can equally be extended to this new and revised issue.

The book in its appearance and contents and its bewildering superabundance of footnotes is much the same as before, but Major Basu is up to date and has much to say of the theory of vitamins and their influence on the internal secretions. Articles, he says, which are rich in vitamins, will be useful in diabetes. This is true, but it does not carry us very far. We cannot follow Major Basu in his obsolete views against the export of wheat, nor is it easy to learn what form of dietary reform he would advocate. He is too much inclined to give prominence to the opinions of others, and we would welcome a clear statement, based on his own very considerable experience as to what he would recommend. The book is full of information and should be in the hands of all practitioners.

War Surgery from Firing Line to Base.—

By BASIL HUGHES, D.S.O., F.R.C.S., Temporary Major, R.A.M.C. (T.F.), and H. STANLEY BANKS, M.A., M.B., Ch.B. (Glasgow), Captain, R.A.M.C. (T.F.). Royal 8vo. Pages, x+623. Coloured plates, 9. Figures in text, 373. Price, 30 shillings net. Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden, London.

THIS book is valuable as being the result of the observations of men who have worked in all parts of the line and includes experiences in France and in Salonika.

The first part of the book consists of chapters on the classification and bacteria of wounds with others on wound infection. The remarks on the effect of fatigue as a predisposing cause of infection of wounds are well worth remembering; saline infusion plus sodium bicarbonate is recommended for shock on the assumption that the bicarbonate will neutralise some of the acid products of fatigue. The observation that gas gangrene and maggots do not exist together in the same wound is interesting, so it may be said that at last something not wholly bad can be quoted in favour of the fly.

Another true remark is that the more efficient the surgical technique the less the need for vaccines.

Succeeding chapters deal with the general complications of wounds, gas gangrene, tetanus, etc., and there is also one on the effects of climate, malaria, etc., on wounds. Apparently malaria in the Balkans must be of a very severe type, judging from what is said about its effects on the healing of wounds, and we confess to being a trifle sceptical on this point. Intramuscular injections of quinine are recommended.

The chapter on antiseptics is good, the hypochlorites, flavine and brilliant green are discussed, and the hypochlorites were found to be distinctly the best.

The general treatment of gunshot wounds is then dealt with, firstly on the battlefield, and backwards through all the halting places to the base, and this principle is followed in succeeding chapters when special injuries are described. Briefly, the principles advised are cleansing of the skin surrounding the wound and excision of it, followed by the application of a Carrel-Dakin dressing as soon as possible; followed later when the wound is sterile by secondary suture. The description of the Carrel-Dakin method is clear and practical. The authors were lucky in being able to have continuity of treatment to the base and their results are very good.

Injuries of bones, joints, etc., are then dealt with on the same plan. The notes on the anatomy of the various joints as regards the route of infection are good.

Although the authors lay great stress on antiseptic precautions being taken when wounds undergoing the Carrel-Dakin treatment are being dressed, yet it can be seen from the photographs that there is an area of bare forearm between the glove and the overall; this is, we consider, an error of technique.

As regards the illustrations, the coloured plates were painted by an artist who was something of a humorist; of the others the majority are good, but some of the photographs are on rather too small a scale to be of much use, and some of the skiagrams are not very clear; still the conditions under which they are taken must be remembered.

The book is clearly written, but there is a certain amount of repetition which is at times irritating. As the result of the work of two surgeons using modern methods, the book is very well worth reading and can be thoroughly recommended.

Diseases of the Male Urethra.—By IRVIN S. KOLL, M.D. Octavo of 151 pages, with 123 illustrations, several in colours. Philadelphia and London: W. B. SAUNDERS Co., 1918. Cloth, 14s. net.

THIS should prove a distinctly useful little book. The opening chapters deal with the anatomy of the urethra, history and bacteriology

of gonorrhœa. The last chapter contains many quotations from Carl C. Warden's work on the gonococcus which is against a good deal of the generally accepted views on the subject. The morphology of the gonococcus is shown to be of great variability, his experience has been "that by using many strains and by varying the medium on which they are grown one can observe all the types of the entire coccus family." There are also various dogmatic statements, some of which may be quoted, *i.e.*, that true gonococci are demonstrable with difficulty or not at all in smears of gonorrhœal exudate and also the diagnosis of gonorrhœa rests on cultural methods only. The old criterion, the microscopic appearance of smears, is unreliable.

The incubation period of gonorrhœa is given as from 24 hours to 14 days, and the average as from 7 to 10; of course if exceptional cases are taken the average may work out as above, but the majority of cases shows symptoms before the seventh day.

The "two-glass test" is relied on.

The advice regarding the period before marriage is undertaken after infection is quite sound,—one year from the time of cessation of symptoms for an anterior urethritis and two for a posterior, subject to the usual tests as regards infection: for prophylaxis the urethra is entirely filled with a 2 per cent. solution of albargin or, failing that, protargol of the same strength. The very free ingestion of water is insisted, upon and we are glad to see that the author is against the use of copaiba, etc.

For local treatment albargin 1 per cent. in the form of an ointment is recommended, and urethral irrigations are inveighed against as being responsible for an extension of the infection into the posterior urethra.

It is unlikely that the vexed question of injections *versus* irrigations will ever be settled until a series of cases of similar duration are treated alternately by these methods and the results stated by an unbiased observer.

Epididymotomy is preferred to vasotomy for epididymitis and rightly so.

It is unnecessary to go into many further details, and simply mention other subjects described, which are chiefly stricture, non-gonorrhœal urethritis, sexual impotence, etc.

We are in entire accord with the author as regards his treatment of stricture, and thoroughly endorse his statement as to the difficulty of external urethrotomy.

The book is most excellently illustrated, a special feature being the large number of urethroscopic pictures. The style is clear, concise and eminently readable, and the book, apart from being a trifle sketchy in places, can be thoroughly recommended.

Medical and Surgical Reports of the Episcopal Hospital of Philadelphia.—Volume IV, 1916.

THIS is one of those hospital reports which have become popular in recent years in America.

The contents consist of papers on various subjects by the members of the staff of the hospital. A wide range of subjects is covered; the ophthalmological department has an excess of papers to its credit, a description of an implantation cyst of the anterior chamber is interesting, and a rare case of a fish-bone in the liver is recorded. The other papers, though interesting, call for no special comment.

Correspondence.

X-RAY OBSERVATIONS TO DETERMINE THE TIME FOOD REMAINS IN THE STOMACH.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—The following observations are worthy of publication:—

CASE I.—A Hindu male, aged 35, with old spastic paraplegia, very healthy, muscular and robust, was given an ounce and a half of bismuth carbonate with his customary full diet, consisting of rice, dāl, fish and vegetables, at 11-30 a.m.

At 12 noon,—the stomach was full and of normal shape and size.

At 3 p.m.,—stomach half full; part of meal in small intestines.

At 5-30 p.m.,—about one-eighth of the total meal still left in stomach: meal reached descending colon.

CASE II.—A healthy-looking, tall, well-built Hindu male, aged about 40, old paraplegia. Full diet as above given at 11-30 a.m. with ½ ounce of bismuth.

At 12 noon,—stomach full: healthy.

At 3 p.m.,—stomach half full: part of meal at splenic flexure of the colon.

At 5-30 p.m.,—about one-sixth of the meal still in stomach: rest had passed on.

CASE III.—A well-nourished, healthy boy, Hindu, aged 12: slight weakness in one leg, resulting from infantile hemiplegia. Full diet with bismuth as above given at 11-30 a.m.

At 12 noon,—stomach full: healthy.

At 3 p.m.,—whole of the meal still in the stomach.

At 5-30 p.m.,—stomach three-fourths full: part of meal in transverse colon.

CONCLUSION.—The fact that the subjects had old hemi- or paraplegia, could not have mattered much, I think. They were quite normal in every other respect, and the first two were more than the average build and size. Further observations on healthy subjects are being made.

In not one of the above cases had the stomach emptied itself completely in six hours even—the boy's stomach was still practically full. Considerable individual variation exists in the matter and the Indian stomach does not empty itself completely in six hours even. This is quite in consonance with the findings of Assistant-Surgeon Purno Chander Sing, reported in the *Indian Medical Gazette*, 1902, and at variance with the conclusion drawn by Dr. Lucean deZilwa, as reported in the *Indian Medical Gazette* of December, 1918, page 463.

Yours, etc.,

CALCUTTA:

S. GANGULY,

December, 1918.

Radiologist & Teacher of Medical Jurisprudence, Campbell Hospital.

A CASE FOR DIAGNOSIS.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—I should like to throw out the following suggestions regarding the treatment and prognosis of the case of which a report appeared in the correspondence column of the October number of the *Gazette* from Sub-Assistant Surgeon Govind Raja.

The child may be given intramuscular injection of colloid palladium (pallamine), minims two, at intervals of three to four days. Two or three such injections should be given and the results carefully watched.

Sources of reflex irritation must be sought for.

Prognosis.—To forecast the prognosis of any given case is always difficult and often impossible. It depends on the cause, the duration, the age, and the family history.

Fits due to cerebral cause are the least amenable to treatment. The longer the duration of an attack the graver the prognosis. The observed results of treatment are its only sure grounds. As the higher nerve centres acquire control over lower ones, the tendency to fits usually dies out.

The moral and general character are more likely to be affected than the intelligence.

NORTH LAKHIMPUR:

Yours, etc.,

6th December, 1918.

RAJENDRA KUMAR SEN.

BUG-EATING AND ITS RESULTS.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—While acting Medical Officer of the Nizam Ghât Column, Mishmi Mission, we were encamped, on the 4th December, 1911, on the north bank of the Dibong River, within sight of Nizam Ghât, prior to our trip up the Sisseri River. On the morning of the 5th December I was awakened at 5 a.m., and asked to see a coolie, who was said to be very ill. On reaching the man in his "basha," he had distinct rigors, which gave me the impression that he was suffering from malaria. The night had been a cold one, and a sharp breeze had been blowing, and I thought that by exposure in an open "basha" he had contracted a chill. On taking his temperature, I was surprised to find he had no fever. I was informed he had passed a bad night from about midnight, had complained of headache, and had vomited. On asking to be shown the dejecta, I was shown some greenish-looking fluid, that appeared to be bile mixed with rice and sand. The patient's extremities were cold, and he could not sit up. His pupils were dilated, and though not unconscious, he could not answer questions. He was in a state of total paralysis without coma, and convulsed with tremors. I had him covered with extra blankets, and administered a dram of spirit ammoniac aromatic with an ounce of water, and ordered him to be carefully watched. Five minutes later, I was called to see two other coolies with similar symptoms. These three cases gave me the impression of some kind of poisoning being the cause; there was no diarrhoea. After careful enquiry I ascertained that, the evening before, the coolies had gathered a large quantity of garden-bugs, which they found under rocks, on both sides of the river, and not on trees. They had heard from the Mishmis that these bugs were edible. On questioning the Mishmis they confirmed the statement, and said that they all suffered in the same manner as the Naga coolies had been affected, but that no one died. Recovery was said to take place in from three to ten days, according to the quantity of bugs consumed. The bugs were eaten cooked, and considered a "delicacy." Continued consumption immunised them against its poisonous effects. Some Naga coolies stated that these bugs were also eaten in their country, but they did not know of any bad results. I was informed that all the Naga coolies had more or less partaken of this savoury dish the night before.

All together 8 cases of poisoning occurred among the coolies in camp, but as there was no certainty how many more would not get affected, I recommended a halt that day. I prepared a strong solution of magnesium sulphate, three drams to the ounce, and administered a dose to all the coolies. One man vomited in my presence: the dejecta was the rice he had eaten that morning, mixed with bile.

The sick coolies were taken over to Nizam Ghât and I accompanied them, and found that three more cases had occurred there, making 11 cases in all.

Samples of the bug were sent to the Curator, Indian Museum, Calcutta, and the Chemical Examiner to Bengal, and their replies are appended below.

Symptoms.—3 to 12 hours after eating.—Frontal headache, followed by nausea, and actual vomiting of greenish fluid mixed with food. Some cases suffered from slight pain, abdominal, after vomiting. Then followed distinct rigors, resembling a typical attack of ague, and these keep on till they merge into general paralysis of all the limbs. There is no fever, and the patients are perfectly conscious all the time, though they cannot answer questions. The pupils are dilated. The pulse fluctuates, but never becomes too bad.

Treatment.—Magnesium sulphate, three drams to the ounce, as a purge. Castor oil cannot be tolerated—it is returned at once. The first day the patients were starved, pure, boiled water was only given; milk and slops on the subsequent days. As a tonic, iron, quinine and arsenic mixture was given.

Prognosis.—Good; no cases have been known to die after eating these bugs; though death may occur from exhaustion of vomiting, if too great a quantity were eaten. All the cases fully recovered from 3 to 10 days.

REPLY RECEIVED FROM THE ASSISTANT SUPERINTENDENT IN CHARGE OF ENTOMOLOGICAL DEPARTMENT, INDIAN MUSEUM, CALCUTTA :

I beg to inform you that the bugs sent appear to be a dark form of *Aspongopus nepalensis*, Westwood, which you will find described by Distant in "Fauna of British India," series Rhynchota, Vol. I, p. 283, with note on its habits and use as a food.

REPLY RECEIVED FROM THE CHEMICAL EXAMINER TO GOVERNMENT, BENGAL :

Results of Chemical Analysis.—The insect is apparently a specimen of *Aspongopus nepalensis*, Westwood. Nothing is known about its possessing toxic properties, but it gives off, in the living state, a very bad smell, resembling that of sulphuretted hydrogen gas. An alcoholic extract of a few insects was administered to a cat but the animal did not develop any toxic symptoms. The offensive smell of the insect is due to a volatile oil, which can be removed by distilling the insects in water; this when given to a cat produced no toxic symptoms. A watery extract of the insects made the animal vomit twice, but it showed no other symptoms and remained quite well. The insects were extracted with alcohol, ether and chloroform, respectively. No poisonous principles were found in any of the extracts.

Yours, etc.,

22A, ORDNANCE ROW,
MEERUT.

HY. B. CORNELIUS,
Asst. Surgeon, I. M. D.

TREATMENT OF SCORPION STING.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—The question of treating scorpion sting has attracted the attention of some, and suggestions on the same have appeared now and then in the medical press (*vide* pages 30, 262 of the I. M. G., vol. LII). I feel it my duty to lay my own experience in this direction before the profession.

Even though several remedies, including enchantments, were suggested, uniform success was absent in all. Under these circumstances a physician has to try several remedies, one after another, at times without success till the patient or the physician is tired. Of all the remedies suggested to alleviate pain, morphia and cocaine hydrochloride solution hypodermically do some good, and can be had readily in all dispensaries. Morphia, hypodermically, can be conveniently used, but some cases require large doses to alleviate pain and suffering, but the attending narcosis is an undesirable sequence. Cocaine hydrochloride solution (5 to 10 minims of 5 per cent.), to be injected subcutaneously close to the sting as was originally recommended by Colonel Duke (*vide* page 137, *Manual of Tropical Medicine*), Castellan and Chalmers, has been tried by me in over 150 cases of scorpion sting, all with success, with the following modifications.

Seat of injection.—The injection must be given exactly on the sting itself. Apparent failure with this drug is due to giving the injection in a place away from the sting, say, quarter of an inch or more. In the first place, it is very difficult to ascertain the seat of sting, either from the patient or from external signs, especially when it is situated on broad spaces, *viz.*, hand, foot, thigh, arm, or back, but not so, when situated on toes and fingers. Looking out for a scratch or sweat will often mislead. When it is not possible to find out, by other means, the seat of the sting, I adopt generally injecting small quantities of cocaine solution into the suspected part or parts suggested by the patient, and ask him if he feels better and inject the full dose at the spot at which some relief is indicated, and the cure is instantaneous. At times, though relief is obtained the patient complains of tingling sensation, and this is an indication that the injection was given in the wrong place and the usual pain recurs in an hour or so. The recurrent pain is very mild and indicates more clearly the site of the sting, and is relieved by another injection of cocaine solution. It is also essential to keep in mind that a patient may have multiple stings, each of which requires a separate injection on the spots stung.

Dosage.—I generally use a solution of 30 grains of cocaine hydrochloride to 1 ounce, and inject 20 to 30 minims on each sting. My experience has taught me (i) that fresh solution acts better; (ii) larger quantities of weak solution act better than a smaller quantity of a stronger solution. I have not as yet seen any subsequent bad effects by the hypodermic use of cocaine, and the maximum I used in some cases was nearly 4 grains, and these cases either had multiple stings or the seat of sting was isolated after several injections.

Up to now I have not maintained any record to be able to give more details, but I now mean doing so and to publish the results.

RAYACHOTI, CUDDAPAH
DIST.
12th December, 1918.

Yours, etc.,
S. SREEMANNARAYANA
MURTHY, L.M.P.

THERAPEUTIC AND LITERARY NOTICES.

WE have received a handsome and complete catalogue of the new and standard medical and surgical publications of the well-known firm of publishers The C. V. Mosby Company, St. Louis, U. S. A., which we commend to the notice of our readers.

MESSRS. BUTTERWORTH & Co., LTD. (India), of Hastings Street, Calcutta, have sent us a useful pamphlet by Dr. J. G. Ghosh, B. Sc. (Manchester), on *Indigenous Drugs of India*, a very useful little book, which we hope to notice fully in an early issue.

The Wellcome *Photographic Exposure Record* is such a useful book that it is hardly necessary to say more than that the new edition for 1919 has appeared. There are many improvements and the calculator is better than ever. The price is only 1s. 6d., and to all photographers it is well worth the money.

Service Notes.

NEW YEARS' HONOUR LIST.

C. I. E.

Lieutenant-Colonel J. T. Calvert, F.R.C.P., Principal of the Medical College, Calcutta.
Major J. H. Murray, I.M.S., Andamans.

C. I. E.

(For services connected with the War.)

Lieutenant-Colonel F. E. Swinton, I.M.S., Medical Storekeeper, Bombay.
Lieutenant-Colonel J. C. Lamont, I.M.S. (ret'd), recalled to act as Professor of Anatomy, Lahore, who thus represents the men recalled from retirement for work during the War.

C. B. E.

Colonel W. G. Beyts, R.A.M.C., Bombay.
Lieutenant-Colonel E. L. Ward, I.M.S., I. G. of Prisons, Punjab.

O. B. E.

Lieutenant-Colonel F. S. C. Thompson, I.M.S., Superintendent, Presidency Jail Calcutta.
Miss Maud L. Davys, Kasauli Laboratory.

M. B. E.

M. Leach, Esq., acting Superintendent, Central Jail, Dacca.
Lala Baij Nath, Civil Surgeon, Jhelum.

KAISER-I-HIND MEDAL.

(Gold.)

Miss G. Davis, Victoria War Hospital, Bombay.
Dr. J. Dodds Price, Nowgong, Assam.

(Silver.)

Assistant Surgeon Khan Bahadur P. P. Cooper, Bombay.
Mr. John William Atkinson, Alipore Central Jail.
Miss M. Mackenzie, Broadwell Hospital, U. P.
Assistant Surgeon Shams-ud-Din, Mission Hospital, Jagadri, Punjab.

KHAN BAHADUR.

Khan Sahib Mian Muhammad Azam, D. I. Khan.
Khan Sahib Ardisher Cowasji, Sub-Assistant Surgeon, Mount Abu.
Khan Sahib Mahbub Ali Khan, Kabul Agency.

RAI BAHADUR.

Babu Gopal Chandra Mitra, Assistant Serologist.
Babu Tarak Nath Mitra, Civil Surgeon of Arrah.

RAO BAHADUR.

M. M. Ry. O. K. C. Avargal, Assistant Chemistry Professor, Madras.
Rai Sahib Daji Ramachandra, Medical Practitioner, Nagpur.

SARDAR SAHIB.

Sub Assistant Surgeon Kesa Singh, I.M.D., Jaipur
(Transport Corps).

KHAN SAHIB.

Civil Assistant Surgeon Fassaouq Husain, U. P.
Babu R. N. Mukerji, Medical Practitioner, Bankura.
L. Mathura Das, Moga, Punjab.
Gobind Ram, Senior Sub Assistant Surgeon, Burma.
Assistant Surgeon P. A. Pati, Baluchistan.
Babu Brindaban Chandra Sur, Mayo Hospital, Ajmere.
Sarojini Nath Bhardwaj, L.M.S., Medical School, Singapore.

RAO SAHIB.

M. R. Ry. M. G. N. Gani, Assistant Surgeon, Madras.
M. P. Vakil, Senior Sub Assistant Surgeon, Bombay.
V. S. Tengsha, Durbar Surgeon, Kathiawar State.

ORDER OF THE BRITISH EMPIRE.

It is officially announced that ladies and gentlemen appointed to the Order of the British Empire may wear the insignia of the Order with morning dress on official and public occasions. The ribbon of the Order may be worn on all occasions.

The method of wearing the insignia with morning dress is as follows:—

Knights Grand Cross, Dames Grand Cross, Knight Commanders, and Dames Commanders should wear the star only on the left breast of the coat or dress.

Gentlemen who are commanders should wear the ribbon from which the badge is suspended under the tie, which should be a bow, the badge hanging about three-quarters of an inch below the bow.

Ladies who are Commanders and officers and members, both ladies and gentlemen, should wear the badge on the left breast of the coat or dress.

The method of wearing the ribbon of the Order is the same for all five classes, both for ladies and gentlemen. A piece of the ribbon of the Order $1\frac{1}{2}$ in. wide and $1\frac{1}{2}$ in. in depth, mounted on a bar of metal in the form of a brooch, is to be worn on the left lapel of the coat or in a corresponding place on the dress.

[It is to be understood that in *mess dress* miniatures only are worn as in the case of the older Orders.—ED., I. M. G.]

THE following despatch by His Excellency General Sir Charles Carmichael Monro, G.C.M.G., K.C.B., A.D.C., General, Commander-in-Chief in India, on the work done in India including the Native States, during the first three years of the war, which appeared in the supplement to the *London Gazette*, dated the 26th November 1918, is published for general information:—(*Gazette of India*, 7th December, 1918).

"The sick and wounded despatched to India from overseas theatres of war, as well as those invalided from Waziristan and other theatres of frontier operations, have been adequately and sympathetically cared for. A number of war hospitals have been formed, other hospitals have been expanded and improved, and Ruling Chiefs and others have generously provided hospitals and convalescent homes in Bombay and elsewhere, in which everything possible has been done for the comfort of the sick and wounded. The satisfactory health of the troops, both in the field and in India affords striking testimony as to the value and efficacy of these measures and the skill, forethought and administrative capacity of the Medical Services."

Names mentioned:—

Lieutenant-Colonel J. M. Crawford, O.B.E., I.M.S.; Major G. I. Davys, I.M.S.; Lieutenant-Colonel T. Jackson, I.M.S.; Colonel W. E. Jennings, I.M.S.; Lieutenant-Colonel W. G. Liston, C.I.E., I.M.S.; Lady Superintendent Miss I. Mc Lloyd; Colonel W. Molesworth, C.I.E., I.M.S.; The late Colonel F. C. Philson, R.A.M.C.; Major G. F. Rugby, R.A.M.C.; Colonel A. W. Sheen, R.A.M.C.T.; Major A. E. Walker, I.M.S.; Lieutenant-Colonel C. F. Wanhill, R.A.M.C.; Lieutenant-Colonel J. W. Watson, I.M.S.

A Committee is sitting in Delaunay I. M. S. reorganisation. A Report is expected in about two months. *Quod bonum, bene, felix, faustumque sit.*

THE number of casualties among officers reported during the fourteen days, 23rd October to 5th November 1918, inclusive, was 3,181, a number considerably lower than that of the previous fortnight. The chief feature is the comparatively large number of deaths from disease reported, a number about equal to those of the previous three fortnightly periods added together. They are presumably chiefly due to the great epidemic of pneumonia, with its sequela, influenza. These casualties are tabulated as follows:—

Killed	863
Died	140
Wounded	1,848
Missing	124
Prisoners	206

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TOTAL ... 3,181

The number of casualties among medical officers reported was very high, 65, in addition to eleven nurses. Here again was the number of deaths from disease, chiefly influenza, was very large. It may be noted that the new titles of the medical department of the Royal Navy appear for the first time. The names are given below. All, unless otherwise noted, are temporary officers of the R.A.M.C.

Killed or died of wounds.—Majors S. S. B. Harrison, J. Morris, M.C. (T.F.); Captains J. J. Fough, P. J. O'Reilly, M.C.; J. G. MacNeill (Canadians); F. C. Harrison (S. R.); Lieutenant D. F. Charlton, L.D.S., Durham Light Infantry; Sister H. Mellett (Canadians).

Lost at sea.—Major C. W. Duggan (R.A.M.C., Regular, Reserve of Officers); Captains M. Murphy, R. E. Lee, Lieutenant R. J. Bassett.

Died.—Surgeon-Commander T. Anstey, R.N.; Surgeon-Lieutenant T. Commander J. Hadwen, R.N.; Surgeon Sub-Lieutenant T. Carlyle, R.N.V.R.; Lieutenant-Colonel L. P. Demetriadi (T.F.); Majors J. H. MacNicol, R. H. McGillicuddy, M.C., T. C. Rutherford (L.M.S.); C. W. C. Myles (T.F.); H. W. Carson, D.S.O. (R.A.M.C., Regular); Captains F. U. Spensley, J. H. Connolly, W. L. Millar, R. B. Brown (S. R.); N. J. Allan (T. F.); W. Mullen (T. F.); C. M. G. Campbell (S. R.); C. E. A. Ring, T. R. Guitfoyle (Canadians); Lieutenants E. H. Glenney (L. D. S., attached R.A.M.C.); Lieutenants E. H. Glenney (S. R.); C. Blake, Sisters M. E. Baker (Canadians); S. Hilling (Q. A. I. M. N. S. R.); Staff Nurses M. Danaher, A. Gledhill (Q. A. I. M. N. S. R.); Staff Nurses M. Danaher (Q. A. I. M. N. S. R.); E. Clarke (Australians); I. R. Watkins (South Africans); Misses E. M. Tonkin, V. C. Mackay, V. Richards (all V.A.D.).

Wounded.—Majors W. C. Wells, J. F. Burgess (Canadians); D. McKelvey, M.C.; J. S. Lewis, W. B. Allen, V.O., M.C. (T.F.); J. B. Scott, M.C. (S. R.); Captains M. L. Farmer, G. Moore (T.F.); M. E. Elliot (S. R.); J. M. Elliot (Regular, R.A.M.C.); H. L. Garson (S. R.); D. G. Gardiner, E. W. D. Hardy, M.C.; J. D. Stewart (Canadians); R. McC. Hill, D.S.O.; G. Davidson, H. S. Evans (S. R.); H. A. C. Swertz, G. S. Troner (S. R.); R. Lindsay (T. F.); H. P. Whitworth (S. R.); C. R. Young, M.C.; F. E. Sprawson, C. F. Hacken, M.C. (S. R.); A. F. Argue (Canadians); F. B. Day (Canadians); N. H. Little (Canadians); H. F. Brice Smith, M.C.; Captain and Quartermaster M. J. Morison (Canadians); Lieutenant F. L. Richard (S. R.).

Major Stanley Septimus Barrymore Harrison, M.C., R.A.M.C. (T. F.), was reported as killed in action, in the casualty list published on 23rd October 1918. He was educated at Guy's Hospital, and took the M.R.C.S. and L.R.C.P. London in 1914. He joined the 3rd North Midland (Wolverhampton) Field Ambulance as Lieutenant on 17th October 1914, and had been promoted to Captain after a year's service, and subsequently to Major. He received the Military Cross in 11th May 1917.

Lieutenant R. J. Bassett, R.A.M.C., was reported as drowned on service by enemy action, in the casualty list published on 23rd October 1918. He had only recently qualified and joined the R.A.M.C. in 1918.

Captain Robert Ernest Lee, R.A.M.C., was reported as drowned on service by enemy action, in the casualty list published on 23rd October 1918. He was educated at Trinity College, Dublin, where he graduated as M.B., B.Ch. and B.A.O. in 1910, and as M.D. in 1911. After acting as senior House Surgeon of Bootle Borough Hospital, Liverpool, he went into practice at Blackrock, County Dublin. He took a temporary commission as Lieutenant in the R.A.M.C. on 15th August 1914, and was promoted to Captain after a year's service.

Captain M. Murphy, R.A.M.C., was reported as drowned on service by enemy action, in the casualty list published on 23rd October 1918. There are two temporary officers of this name and rank in the R.A.M.C.

Sister H. Mellett, Canadian Army Nursing Service, was reported as killed, in the casualty list published on 23rd October 1918.

Major Charles William Duggan, R.A.M.C. (retired, Reserve of Officers), was lost at sea, through enemy action, on 10th October 1918, aged 51. He was educated at Edinburgh University, where he graduated as M.B. and O.M. in 1887, subsequently studying at Vienna, Prague and Paris. After acting as assistant to the Professor of Physiology at Edinburgh, he entered the R.A.M.C. as Surgeon-Captain on 28th July 1891, becoming Major on 28th July 1903, and retiring on 28th July 1909. He served in the West African Campaign of 1893, and after his retirement was employed at Lincoln.

Surgeon Sub-Lieutenant Thomas Carlyle, Royal Naval Volunteer Reserve, died of pneumonia in St. Bartholomew's Hospital on 21st October 1918, aged 24. He was the only son of Lieutenant-Colonel Carlyle.

Major Thomas Corrie Rutherford, Indian Medical Service, died of malaria on active service abroad, on 18th October 1918, aged 38. He was born on 13th November 1878, the eldest son of the late T. B. Rutherford, and

educated at St. Thomas' Hospital and Durham University, where he graduated as M.B. and B.S. in 1902, also taking the M.R.C.S. and L.R.C.P., London, in the same year. He entered the I.M.S. as Lieutenant on 31st January, 1903, became Captain on 31st January, 1906, and Major on 31st July, 1911, and at the time of his death was acting as Lieutenant-Colonel in Command of a Field Ambulance. Before the war he was serving in civil employ in the Central Provinces.

Major Richard Hugh McGillicuddy, M.C., R.A.M.C., died of pneumonia at sea on 2nd October 1918. He was the younger son of the McGillicuddy of the Reeks, and was educated at University College Hospital, London, taking the M.R.C.S., and L.R.C.P., London, in 1911. He held the post of District Medical Officer of Ward No. 7, Borough of St. Pancras. He took a temporary commission as Lieutenant in the R.A.M.C. on 4th July 1915, was promoted to Captain after a year's service, and to an acting Majority in the beginning of 1918. He received the Military Cross on 14th January 1916.

Captain John James Tough, R.A.M.C., was killed in action at an advanced dressing station on 7th October, 1918, aged 30. He was the only surviving son of Dr. William R. Tough, of Accrington, Lancashire, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1910. After acting as Medical Officer in the Outpatient Department of the Edinburgh Royal Infirmary, and as House Surgeon of the Sick Children's Hospital, Edinburgh, he went into practice in partnership with his father at Accrington. He took a temporary commission as Lieutenant in the R.A.M.C. on 25th May 1916, and was promoted to Captain on completion of a year's service. His younger brother, Captain Arnold Bann-tyne Tough, L.D.S., South Lancashire Regiment, was killed in action on 1st July 1916, the opening day of the great and long-drawn-out battle of the Somme.

Captain Digby Burns, R.A.M.C., was reported as drowned in the casualty list published on 22nd October 1918. He took the L.R.C.P. and S.I. in 1912, after which he went into practice in Dublin. He took a temporary commission as Lieutenant in the R.A.M.C. in January 1916, and was promoted to Captain on completion of a year's service.

Captain Frank Oswald Spensley, R.A.M.C., died of pneumonia at Burden Military Hospital, Weymouth, on 23rd October 1918. He was the youngest son of the late Revd. James Spensley, was educated at St. Thomas' Hospital, and took the M.R.C.S. and L.R.C.P., London, in 1917. After acting as House Surgeon of Lowestoft Hospital, he took up the post of Senior Assistant Medical Officer of the Darenth Industrial Colony, Dartford, Kent. He joined the R.A.M.C. as a temporary Lieutenant on 10th November 1916, and was promoted to Captain after a year's service.

Captain Patrick Joseph O'Reilly, M.C., R.A.M.C., was returned as killed in action, in the casualty list published on 25th October 1918. He took the L.R.C.S. and P.I. in 1914, joined the R.A.M.C. as a temporary Lieutenant on 21st October 1914, was promoted to Captain after a year's service, and was attached to the East Yorkshire Regiment when killed. He received the Military Cross on 14th November 1916.

Major Charles William Spencer Myles, R.A.M.C. (T.F.), died of pneumonia, on active service, on 19th October 1918. He was the younger son of the late Dr. James P. Myles, of Birr, Ireland, and was educated at Trinity College, Dublin, where he graduated as B.A. in 1908, as M.B., B.Ch., and B.A.O. in 1912, after which he went into practice at Merthyr Vale, Glamorgan. He joined the Special Reserve of the R.A.M.C. as Lieutenant after qualifying, and on 7th January 1914 transferred, in the same rank, to the 2nd Welsh (Cardiff) Field Ambulance (T.F.). He was promoted to Captain after a year's service, and subsequently to Major.

Captain James Harris Connelly, R.A.M.C., died at the Acheson Military Hospital, Regent's Park, London, on 23rd October 1918, aged 42. He was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1902, and as M.D. with commendation, in 1906; and also studied at King's College Hospital, London, at St. Bartholomew's, and at the London and the Middlesex Hospitals. After filling the posts of House Surgeon to the Royal Albert Hospital, Devonport, of Senior House Surgeon to the Chesterfield and North Derbyshire Hospital, and of Resident Medical Officer at the Throat Hospital, Golden Square, London, he went into practice in London, and held the appointments of Chief Assistant in the Aural Department at Bart's, and of Surgeon in charge of the Throat, Nose, and Ear Department at the Queen's Hospital for Children. He took a temporary commission as Lieutenant in the R.A.M.C. on 10th October 1914, and was promoted to Captain after a year's service.

Captain William Linton Millar, R.A.M.C., died on active service in France on 23rd October 1918, aged 37. He was educated at Aberdeen University, where he graduated as M.A. in 1903, and as M.B. and Ch.B. in 1906, after which he went into practice at Forres, where he was Medical Officer of Kinloss Parish and Honorary Physician and Surgeon to the

Leanechoil Hospital. He took a temporary commission as Lieutenant in the R.A.M.C. on 1st July, 1916, and was promoted to Captain after a year's service.

Major John Morris, M.C., R.A.M.C. (T.F.), was killed in action on 7th October, 1918. He was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1904, also taking the F.R.C.S. (Edin.) in 1909, after acting as Assistant Surgeon to the Dinowic Quarries Hospital, and as House Surgeon of Denbighshire Infirmary, he went into practice at Hyde, Cheshire. He joined the 6th Territorial (Stockport) Battalion of the Cheshire Regiment as Lieutenant and Medical Officer on 8th March, 1912, was promoted to Captain on 1st August, 1915, and subsequently to Major. He received the Military Cross on 1st January, 1917.

Major Herbert William Carson, D.S.O., R.A.M.C., was reported as having died on service, in the casualty list published on 29th October, 1918. He was born on 22nd May 1882, and graduated as M.B., B.Ch., and B.A.O. of the Royal University, Ireland, in 1905. He entered the R.A.M.C. as Lieutenant on 29th July, 1907, was promoted to Captain on 29th January, 1911, and recently to Major. He received the D.S.O. on 4th June, 1918.

Lieutenant-Colonel Louis P. Demetriadi, R.A.M.C. (T.F.), died at Southport on 26th October, 1918, aged 55, after a long illness contracted on active service. He was educated at Leeds University, and took the diplomas of L.R.C.S.I. and L.F.P.S.G. in 1886, also subsequently the F.R.C.S. (Edin.) in 1899, the D.P.H. in 1892, and the M.D. (Durham) in 1905. After acting as House Surgeon of Huddersfield Infirmary, he went into practice at Edgerton, Huddersfield. Before the war he held a commission on the 7th (Leeds) West Riding Casualty Clearing Station Staff, in which he attained the rank of Lieutenant-Colonel on 3rd May, 1915, and had recently been serving at the front in command of that unit. He had received the Territorial Decoration, and had twice been mentioned in despatches.

Captain Roger Dawson Dawson-Duffield Brownson, R.A.M.C. (S.R.), died of influenza at Peshawar on 21st October, 1918. He was the only son of the Rev. F. Brownson, of Compton Greenfield, Gloucestershire, and was educated at the London Hospital, and at Cambridge, where he graduated as B.A. in 1905, and as M.B. and B.C. in 1911, having also taken the M.R.C.S. and L.R.C.P. (Lond.) in 1908. He had filled the posts of Emergency Officer at the London Hospital, and of Clinical Assistant at the Great Ormond Street Hospital. He joined the Special Reserve of the R.A.M.C. as Lieutenant on 30th September, 1914, and was promoted to Captain on 1st April, 1915.

Surgeon-Commander Thomas Austen, R.N., died at the Royal Naval Hospital, Chatham, on 22nd October, 1918. He was educated at Charing Cross Hospital, and after taking the M.R.C.S. and L.R.C.P. (Lond.) in 1888, entered the Navy, in which he attained the rank of Fleet Surgeon on 21st February, 1905.

Lieutenant Douglas Ferrier Charlton, L.D.S., Durham Light Infantry, was reported as missing on 25th April 1918, and is now presumed killed on that date. He was the second son of the late W. A. Charlton, of Birmingham, and was educated at Stewart's College, Edinburgh, and at the Dental Hospital in that city, taking the L.D.S. of the Royal College of Surgeons, Edinburgh, in 1913, after which he went into practice in Edinburgh. His younger brother, Second Lieutenant W. F. Charlton, who was also an L.D.S. and an officer in the Durham Light Infantry, had previously been killed.

Captain Charles Montague Gordon Campbell, R.A.M.C. (S.R.), was reported as having died on service, in the casualty list published on 1st November, 1918. He took the L.R.C.P. and S.I. in 1914, took a commission as Lieutenant in the Special Reserve of the R.A.M.C. on 8th February, 1915, and was promoted to Captain on 8th August, 1915.

Captain T. R. Guilfoyle, Canadian Army Medical Corps, was reported as having died on service, in the casualty list published on 5th November, 1918.

Captain Walker Malden, R.A.M.C. (T.F.), died at Bateman House, Cambridge, on 28th October, 1918, aged 60. He was educated at Cambridge, where he graduated as M.A. in 1885, M.B. in 1886, and M.D. in 1905, and at St. Bartholomew's Hospital, also taking the M.R.C.S. in 1886, and the M.R.C.P. (Lond.) in 1909. He held the posts of Clinical Pathologist and Director of the Clinical Laboratory at Addenbrooke's Hospital, Cambridge, and was Honorary Medical Officer of the Charity Organisation Society and of the Cambridge Rescue and Prevention Society. He took a commission as Captain, R.A.M.C. (T.F.), on the staff of the 1st Eastern (Cambridge) General Hospital on 6th May, 1908, and was Pathologist to that hospital.

Dr. Charles Augustus Eamanson Ring, late R.A.M.C., died of pneumonia on 29th October, 1918, aged 39. He was the eldest son of A. R. Ring, late R.N., of Seaview, Isle of Wight, was educated in the schools of the Edinburgh and Dublin Colleges, and took the Scottish triple qualification in 1905, the F.R.C.S. (Edin.) in 1908. After acting as Extern Clinical Assistant at the Coombe Lying-in Hospital, Dublin,

he went into practice at Brinklow, near Rugby, Warwickshire, where he was Medical Officer and Public Vaccinator to the Brinklow district of the Rugby Union, and Medical Officer of the Rugby Isolation Hospital. He took a temporary commission as Lieutenant in the R.A.M.C. in the latter half of 1915, and was promoted to Captain after a year's service, but had resigned some time ago, on the expiration of his term of service.

Captain Noel James Allan, R.A.M.C. (T.F.), was reported as having died on service, in the casualty list published on 31st October, 1918. He was educated at Liverpool University, where he graduated as M.B. and Ch.B., with honours, in 1916. After acting as House Surgeon and House Physician of Liverpool Royal Infirmary, and as Obstetric Assistant at Liverpool Maternity Hospital he took a commission as Lieutenant in the 1st West Lancashire Field Ambulance in 1916, and was promoted to Captain in 1917.

Surgeon Lieutenant-Commander John Hadwen, R.N., was reported as having died on service, in the casualty list published on 2nd November, 1918. He was educated at St. Bartholomew's Hospital and took the M.R.C.S. and L.R.C.P. (Lond.) in 1907, also graduating as B.Sc. (Lond.) in 1905 and as M.B. and B.S. in 1907. He joined the Navy as Surgeon on 14th May, 1909, and in the early part of the war was serving on H.M.S. *King Edward VII.*

Captain Frank Cecil Harrison, R.A.M.C., S.R., was reported as killed in action, in the casualty list published on 2nd November, 1918. He was educated at Sheffield University, and at the Royal Dental Hospital, London and took the L.D.S. of the R.C.S. (Eng.) in 1913, and the M.R.C.S. and L.R.C.P. (Lond.) in 1915. He joined the Special Reserve of the R.A.M.C. as Lieutenant on 10th August, 1914, joined for duty on 3rd February, 1915, and was promoted to Captain on 3rd August, 1915. He was attached to the Duke of Wellington's West Riding Regiment when killed.

Lieutenant Cecil Blake, R.A.M.C., died on 30th October, 1918, at Rugelay Camp, of septic pneumonia, aged 30. He was the elder son of the late John Blake of East London, South Africa, and had only recently qualified and joined the R.A.M.C.

Captain James Grant MacNeill, M.C., Canadian Army Medical Corps, was killed in action on 12th October, 1918. He was born at St. Stephen's, New Brunswick, on 17th October, 1893, graduated at the Queen's University in 1916, and joining the Canadian A.M.C. left Canada in May 1916. He went to France in August 1916, where he served with a Field Ambulance and as Regimental Medical Officer. He received the Military Cross in July 1918.

Captain A. Allan Parker, M.C., Canadian Army Medical Corps, died of wounds in 12th October, 1918. He was born on 4th October, 1892, at Mimico, Ontario, and educated at Toronto University, where he graduated in 1914. He left Canada in May 1916, and went to France in December 1916, where he served chiefly in a Field Ambulance. He received the Military Cross in October 1917.

Captain Ernest Guy Robertson, L.D.S., attached R.A.M.C., died at the Queen's Hospital, Froggnal, Sidcup, on 28th October, 1918, of heart-failure following influenza. He was educated at Guy's Hospital, and after taking the L.D.S. of the Royal College of Surgeons, England, in 1907, went into practice at Southampton, where he was Honorary Dental Surgeon to the Royal Southampton and South Hants Infirmary, and to the Free Eye Hospital, Southampton, and Dental Surgeon to the training ship *Mercury* at Hamble. He took a commission as Lieutenant and Dental Surgeon on 16th December, 1914, and was promoted to Captain after a year's service.

THE number of casualties reported among officers, during the fourteen days, 6th to 19th November, 1918, inclusive, was 3,009, a number only slightly less than that of the preceding fortnight. Though the Armistice was signed on 11th November, casualties are not usually reported until ten to fourteen days after they occur. Again the comparatively large number of deaths from disease is noticeable. They may be tabulated as follows:—

Killed	...	...	707
Died	...	...	164
Wounded	...	...	1,835
Missing	...	...	167
Prisoners	...	...	136

TOTAL ... 3,009

The number of casualties among medical officers was high, 62, of which nearly one-half were deaths from disease, due to the prevailing pandemic of influenza and consequent pneumonia. The number of deaths from disease, indeed, almost equals that of wounded, and the total number of deaths far surpasses that of the wounded. The names are given below. All, unless otherwise stated, are temporary officers of the R.A.M.C.

Killed and died of wounds.—Major H. Beal (U.S.A.); Captains H. P. Whitworth (S.R.), J. J. Tough, N. H. Little (Canadians), H. Dunlop (Canadian Public Domain, Gurukul, R. Clark; Lieutenants D. W. Sinclair, P. R. Shannon.

Lost at Sea.—Surgeon-Lieutenant D. S. MacKnight (R.N., Temporary, H.M.S. *Britannia*); Sister W. Starling (Q.A.I.M.N.S.R., R.M.S. *Leinster*).

Died.—Colonel S. O. Philson (R.A.M.C., Regular); Lieutenant-Colonel J. T. McEntire (R.A.M.C., Regular); J. E. Hodgson (R.A.M.C., Regular); Majors D. Burrows, R. C. Irvine; Captains F. R. Tickle, J. M. Downie (S.R.), C. H. V. Smith (Canadians), H. P. Thomson (Canadians), E. Boyers, L. T. McClintock (I.M.S.), A. B. Robertson (S.R.), C. D. Hamilton (Canadians), P. S. Green, W. E. Boyce (Canadians, Dental), H. G. F. Spurrell, L. A. Writer, D. G. Wearing (R.A.M.C., Dental), A. M. L. A. Jukes (I.M.S.); Captain and Quarter-Master J. L. Johnston (Canadians); Lieutenants R. H. Lalande (Canadians), W. McL. McLeod (Canadians), J. Dow (I.M.S.); Matron J. Miln Walker (Australians); Sister E. V. Mackay (Canadians); Staff Nurse E. H. Watson (Q.A.I.M.N.S.R.); Miss G. Llewellyn (V.A.D.).

Wounded.—Colonel H. M. Dunn, C.M.G., D.S.O. (R.A.M.C., Regular); Majors W. H. Morrison (T.F.), H. B. Graham, D.S.O., M.C., D. H. Russell, M.C.; Captains J. R. Cameron, C. A. T. Hott, R. T. Ranie, M.C., C. H. Seville, W. B. Wilson, A. R. Campbell (Canadians), J. Rowland (S.R.), W. H. Ferguson, M.C., E. Rogerson (R.A.M.C., Regular), L. H. Fraser (Canadians), T. L. Bomford (I.M.S.), A. R. Hagerman (Canadians), M. W. Thomas (Canadians), W. G. Shakespeare (R.A.M.C., Regular), E. T. Curran (Canadians), A. A. Hunter (R.A.M.C., Regular), A. U. Millar, P. G. Leeman, J. Mannel, M.C., C. H. G. Prance, A. Rodger (S.R.), I. W. Jones; Surgeon D. L. Baxter, R.N.

Captain James Maitland Downie, R.A.M.C. (S.R.), died at a British General Hospital at Basra, of pneumonia following influenza, on 29th October, 1918, aged 25. He was the only son of Dr. Walker Downie, of Glasgow, and was educated at the University of Cambridge (Christ College), where he graduated as B.A., with first-class honours in the Natural Science Tripos of 1914, and of Glasgow. He took the M.R.C.S. and L.R.C.P. London in 1916, and after serving as Resident House Surgeon of the Western Infirmary, Glasgow, joined Special Reserve of the R.A.M.C. in 1916, and was promoted to Captain six months later.

Lieutenant D. W. Sinclair, R.A.M.C., attached Royal Scots, was reported as having died of wounds, in the casualty list published on 7th November, 1918. He had only recently qualified, and joined the R.A.M.C.

Sister Winifred Starling, Q.A.I.M.N.S.R., was lost in the R.M.S. *Leinster* torpedoed and sunk in the Irish Sea on 10th October, 1918. She was the fourth daughter of the late J. P. Starling, of Abbeythorpe, Burwood, Sydney, Australia. She was recently serving in the New Zealand Hospital, at Walton on Thames. Two other nurses, Misses S. V. Barrett and D. M. Jones, both V.A.D., had previously been reported as lost in the *Leinster*.

Captain Frederick Ralph Tickle, R.A.M.C., died suddenly in London on 6th November, 1918. He was educated at Liverpool University, where he graduated as M.B. and Ch.B., with first-class honours in 1906. After acting as House Physician of Liverpool Royal Infirmary, he went into practice at Southampton, where he was Medical Officer of No. 5 District and Public Vaccinator of No. 4 District, of the Southampton Union. He joined the R.A.M.C. as a temporary Lieutenant on 22nd January, 1917, and was promoted to Captain after a year's service. He was returned as a prisoner of war in the casualty list published on 13th May, 1918, when he was attached to the Rifle Brigade, and had been repatriated only a week before his death.

Captain and Quarter-Master J. L. Johnston, Canadian Army Medical Corps, was returned as having died on service, in the casualty list published on 11th November, 1918.

Captain Edward Boyers, R.A.M.C., died in October, 1918, in Steevens's Hospital, Dublin. He was the son of Mr. John Boyers, of Longford, and was educated at Campbell College, Belfast, and at Trinity College, Dublin, where he graduated as M.B., B.Ch. and B.A.O. in 1915. He joined the R.A.M.C. as a temporary Lieutenant on 18th October, 1915, and was promoted to Captain after a year's service. He had been on active service in France for over two years, and was mentioned in despatches in December, 1917; latterly he had been stationed in Dublin.

Major Donald Burrows, R.A.M.C., died at the War Hospital, Chester, on 6th November 1918. He took the Scottish triple qualification in 1902, and also gained the certificate of the London School of Tropical Medicine in 1908. After qualifying, he entered the West African Medical Staff, and was Provincial Medical Officer at Sierra Leone when he took a temporary commission in the R.A.M.C.

Captain Henry Parks Whitworth, R.A.M.C. (S.R.), was reported as having died of wounds, in the casualty list published on 12th November, 1918, having previously been returned as wounded in that of 31st October. He was educated at Guy's Hospital, and took the M.R.C.S. and L.R.C.P. London in 1914. He joined the R.A.M.C. Special Reserve as Lieutenant on 18th December, 1914, joined for service on 4th January, 1915, and was promoted to Captain

six months later. He was attached to the King's Own Scottish Borderers.

Captain H. Dunlop, Canadian Army Medical Corps, was reported as having died of wounds, in the casualty list published on 13th November 1918.

Captain Angus Burns Robertson, R.A.M.C. (S.R.), died at Dundee War Hospital, of pneumonia following influenza on 8th November, 1918. He was the only son of Captain Angus Robertson, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1911. He joined the Special Reserve of the R.A.M.C. as Lieutenant in 1917, had served in Egypt and Palestine, and was under orders for France at the time of his death.

Captain H. P. Thompson, Canadian Dental Corps, was reported as having died on service, in the casualty list published on 9th November, 1918.

Lieutenant-Colonel James Thomas McEntire, R.A.M.C., was reported as having died on service, in the casualty list published on 12th November, 1918, aged 38. He was educated at Trinity College, Dublin, where he graduated as M.B., B.Ch. and B.A.O. in 1903. He joined the R.A.M.C. as Lieutenant on 31st August, 1903, became Captain on 31st January, 1907, and Major on 28th February, 1915, and had since been promoted to Lieutenant-Colonel.

Captain Lawson Tait McClintock, R.A.M.C. (V.), died at Loddon, Norfolk, on 11th November, 1918, of pneumonia after influenza. He was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1901. After acting as Assistant House Surgeon of Salop Infirmary, he went into practice at Loddon, in Norfolk, where he was Medical Officer of Health of Loddon and Clavering Districts, Medical Officer of the Work House and of No. 2 District of Loddon and Clavering Union, also Public Vaccinator. He held a commission as Captain in the R.A.M.C. Volunteers, was Medical Officer in charge of Troops at Loddon, and to the Red Cross Hospitals at Loddon and Heddenham Hall.

Captain George Thomas Carroll, I.S.M.D., retired, died in London on 7th September, 1918, aged 66. He attained the rank of Senior Assistant Surgeon and Captain on 1st April, 1913, and retired on 19th March, 1907.

H.M.S. *Britannia*, a battleship of 16,350 tons, was torpedoed and sunk by a German submarine in the western entrance of the Straits of Gibraltar on the morning of 9th November, 1918. Two officers and about 40 men were lost; 39 officers and 693 men saved. One of the two officers lost was Surgeon-Lieutenant Dundas Simpson MacKnight, R.N. He was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1900, also taking the Liverpool diploma in Tropical Medicine in 1911. He served as a Civil Surgeon in the South African War in 1901-02, receiving the medal; and afterwards as Medical Officer of the British South Africa Company. He joined the Navy as a temporary Surgeon in 1915. He was the second son of the late Revd. John MacKnight, of Whithorn.

Lieutenant P. R. Shannon, R.A.M.C., was reported as having died of wounds, in the casualty list published on 15th November, 1918. He had only recently qualified, and taken a temporary commission in the R.A.M.C.

Lieutenant Colonel John Edward Hodgson, R.A.M.C., died at Salonika, of pneumonia following influenza, on 5th November 1918, aged 44. He was born on 31st August 1874, the son of the late Caleb Hodgson, of Carlisle, and educated at Owen's College, Manchester, taking the M.R.C.S. and L.R.C.P. London in 1898, and the D.P.H. of the London Colleges in 1903. After acting as Resident Clinical Assistant at the Barnes Convalescent Hospital, Cheshire, Manchester, he entered the R.A.M.C. as Lieutenant on 28th January 1899, becoming Captain on 28th January 1902, Major on 28th October 1910, and Lieutenant-Colonel on 1st March 1915.

Lieutenant John Dow, I.M.S., died on service, at Shiraz, Persia, of influenza on 5th November 1918, aged 29. He was educated at Aberdeen University, where he graduated as M.B. and Ch.B. in 1914. After acting as House Surgeon of the Aberdeen Royal Infirmary, he took a temporary commission as Lieutenant in the R.A.M.C. in 1915, and subsequently accepted a permanent commission as Lieutenant in the Indian Medical Service from 13th March 1916. He was the eldest son of Mr. Peter Dow, of Elgin.

Captain Philip Sydney Green, R.A.M.C., died at Wimereux, near Boulogne, on 13th November 1918, aged 33. He was the fourth son of the late John Green, J.P., of Newton-le-Willows, Lancashire, and was educated at the Victoria University, Manchester, where he graduated as M.B. and Ch.B. in 1911. He joined the R.A.M.C. as a temporary Lieutenant early in 1916, and was promoted to Captain after a year's service.

Major Howard Beal, United States Medical Corps, of Waterlane Farm, Shrewsbury, Massachusetts, died at Neuilly, near Paris, on 20th July 1918, of wounds received at Roy St. Nicholas near Pierrefonds, on 18th July, aged 49. He was Chief Surgeon to the American Women's Hospital at Paignton, Torquay, in 1914-15.

Captain Neville Hall Little, Canadian Army Medical Corps, died of wounds on 28th October 1918. He was born

on 29th June 1893, at Trenton, Ontario, and educated at Toronto University, where he graduated in Medicine in 1916. After joining the C.A.M.C., he came to England in April 1917 and went to France in July 1918, where he served in a General Hospital until September, when he was posted to a field ambulance, with which he was serving when fatally wounded.

Captain W. E. Boyce, Canadian Dental Corps, was reported as having died on service, in the casualty list published on 18th November 1918.

Captain Charles Henry Vernon Smith, Canadian Army Medical Corps, died on service on 1st November 1918. He was born on 15th July 1886, at Oxford, Ontario, and educated at McGill University, Montreal, where he graduated in Medicine in 1914. He came to England in the C.A.M.C. in March 1916, went to France the following July, and served in a General Hospital and as regimental medical till December 1916 when he was invalided to England.

Captain Thomas Reginald Guilfoyle, Canadian Army Medical Corps, died on service on 9th October 1918. He was born at Lucan, Ontario, on 6th October 1892, and educated at the Western University, London, Ontario, where he graduated in Medicine in 1914. He came to England in the C.A.M.C. in July 1916, and served in England till February 1918, when he was invalided to Canada. He returned to England in July 1918.

Three officers of the Canadian Army Medical Corps were reported as having died on service in the casualty list published on 14th November 1918, viz., Capt. C. D. Hamilton, C.A.M.C., Lieut. R. H. Lalande, C.A.M.C., Lieut. W. McL. McLeod, C.A.M.C.

Captain James Gaston, M.C., R.A.M.C., attached Suffolk Regiment, was reported as having died of wounds, in the casualty list published on 18th November 1918. He was educated at Queen's College, Belfast, and graduated as M.B., Ch.B. and B.A.O. of the Royal University, Ireland, in 1906, after which he went into practice at Carrabeg, Clough Mills, County Antrim. He took a temporary commission as Lieutenant in the R.A.M.C. on 28th December 1914, was promoted to Captain after a year's service and received the Military Cross on 26th November 1917.

Major Robert Charles Irvine, R.A.M.C., died at No. 10 Red Cross Hospital, France, of pneumonia, on 10th November 1918. He was the second son of Mr. Irvine, of Clontarret, County Monaghan, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1913. He joined the R.A.M.C. as a temporary Lieutenant on 1st October 1914, was promoted to Captain after a year's service and to an acting Majority in January 1918. He was attached to the 65th Field Ambulance.

Captain Robert Clark, R.A.M.C., was killed in action on 7th November 1918. He was the last surviving son of Inspector Clark, Police Office, Burnbank, Hamilton, and was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1914. After serving as House Surgeon of Glasgow Royal Infirmary, he joined the R.A.M.C. as a temporary Lieutenant on 1st July 1915, and was promoted to Captain after a year's service. He was attached to the 20th Hussars. His two brothers, Captain A. LeB. Clark and Second Lieutenant J. D. Clark, had already fallen in action.

Colonel Samuel Cowell Philson, Army Medical Staff, died of pneumonia at Karachi on 13th November 1918, aged 53. He was born on 14th September 1860, the son of the late W. Philson, M.D., of Cheltenham, and educated at King's College Hospital, London, taking the M.R.C.S. and L.R.C.P. Ed. in 1883. He entered the R.A.M.C. as Surgeon on 30th May 1885, became Surgeon Major on 30th May 1897, Lieutenant-Colonel on 30th May 1905, and Colonel on 1st March 1915. He served in the Burma Campaigns in 1886-89, and 1891-92 (medal), and in Tirah 1897-98 (medal); and also served on the staff of the Governor-General of Australia from 21st February 1911 to 14th April 1902.

Captain Andrew Monro Jukes, I.M.S., died of neuritis and heart-failure after rheumatic fever in Egypt, on 18th October 1918, aged 36. He was born on 24th September 1882, educated at St. Bartholomew's Hospital, and graduated as M.B. and B.S. London in 1906, and as M.D. in State Medicine in 1908, also taking the D.P.H. Cambridge in 1908. He entered the I.M.S. as Lieutenant on 30th January 1909, passing in first, after having acted as Casualty House Surgeon of Hull Royal Infirmary. He became Captain on 30th January 1912. Before the war he was Medical Officer in charge of the Brigade Laboratory at Shillong, Assam, and then Deputy Sanitary Commissioner of the Presidency Circle, Bengal; and in the first year of the war was Medical Officer of the 128th Pioneers, in the Indian Expeditionary Force "E."

Captain Herbert George Flaxman Spurrell, R.A.M.C., died of pneumonia at Alexandria on 8th November 1918, aged 41. He was the son of the late Herbert Spurrell, of West Norwood, and was educated at the London Hospital and at Oxford, where he graduated as M.A., M.B. and B.Ch. in 1907, also taking the D.T.M. of the London School of Tropical Medicine in 1912. After acting as temporary

Medical Officer of Obnasi, South Ashanti, in 1916-17, he took a temporary commission as Lieutenant in the R.A.M.C. in the middle of 1917, and was promoted to Captain after a year's service.

Captain Laurence Anus Winter, R.A.M.C., died of pneumonia after influenza on 15th November 1918, at No. 20 General Hospital in France, aged 50. He was educated at St. Bartholomew's Hospital, and took the M.R.C.S. and L.R.C.P. London in 1892, and also the M.D. of Durham in 1912. After acting as Clinical Assistant in the Skin Department at Bart's, as Clinical Assistant in the East London Hospital for Children, and as Assistant House Surgeon of the Kent and Canterbury Hospital, he went into practice at Farnborough, but afterwards removed to Sheerness. He took a temporary commission in the R.A.M.C. early in 1917, and was promoted to Captain after a year's service.

Captain Douglas George Wearing, L.D.S., attached R.A.M.C., died of pneumonia at the Military Hospital, Limerick, on 11th November 1918, aged 34. He was educated at Guy's Hospital, where he served as Demonstrator in Practical Dental Metallurgy, and took the L.D.S. of the Royal College of Surgeons, England, in 1905, after which went into practice at Sidcup. He took a commission in August 1918.

THE number of casualties among officers reported during the fourteen days, 20th November to 3rd December, 1918, inclusive, was 1,629. The number is comparatively small. The Armistice was signed on 11th November, but casualties are usually officially reported some ten to fourteen days after they have taken place. They may be tabulated as follows:—

Killed	...	539
Died	...	215
Wounded	...	709
Missing	...	79
Prisoners	...	87

TOTAL ... 1,629

The number of casualties among medical officers, 38, was high as compared to the total, owing to the very large number of deaths, which make up over half of the total number. Deaths from influenza have been reported from all over the world, England, Scotland, France, Egypt, Salonica, India, Mesopotamia, South Africa, East Africa. The names are given below. All not otherwise stated are temporary officers of the R.A.M.C.

Killed or died of wounds.—Captains R. F. Copland, H. W. White.

Died.—Lieutenant-Colonels J. M. Reid (R.A.M.C., Regular, retired), P. S. O'Reilly, C.M.G. (R.A.M.C., Regular), W. M. Sturrock (T.F.), M. Holmes (New Zealand); Majors W. S. Macdonnell (Canadians), G. G. Anderson, H. W. Sykes; Captains R. S. Cooke, H. R. Crow (S.R.), M. K. S. R. Rao (I.M.S., Temporary), E. D. Keane, M. W. H. Miles, G. L. Manle (S.R.), B. W. Cherrett (East Africa), S. W. Matthews, C. R. Lister (Australians); Surgeon-Lieutenants J. F. Howells (R.N., Temporary), W. H. Pickup (R.N., Temporary); Surgeon Sub-Lieutenants J. D. Gear (R.N.V.R.), E. A. Pearson (R.N.V.R.); Dr. A. C. McHattie (East Africa); Assistant Surgeon A. R. Easdon (I.S.M.D.); Sister N. Hobbs (Q.A.I.M.N.S.R.); Staff Nurse E. A. Baker (South Africans).

Wounded.—Majors H. D. Smythe, H. D. Lane, M.C. (T.F.), F. Henderson, M.C.; Captains C. N. Cord, J. Pryce-Davies, J. Scott, G. Robinson, A. W. Raymond, M.C., S. Singh (I.M.S., Temporary), W. G. Mackenzie, M.C. (T.F.), G. W. Mitchell, J. J. B. Edmond (S.R.); Lieutenants W. H. Ross, R. R. MacGregor.

Captain Henry Paterson Crow, R.A.M.C. (S.R.), died of influenza at Jhansi, Central India, on 9th November, 1918. He was the son of Mr. John Crow, of Biggar, late of Glasgow, and was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1915. He took a commission as Lieutenant in the Special Reserve of the R.A.M.C. on 19th April, 1915, and was promoted to Captain after six months' service.

Lieutenant Robert S. Scott, Surgeon, United States Navy, only son of T. Scott, M.D., of Brooklyn, New York, died at Peckskill, New York, on 15th October, 1918.

Captain Robert Sturgeon Cocke, R.A.M.C., died in London aged 44, on 16th November, 1918, of disease contracted on service in the East. He was educated at King's College Hospital, London, and took the M.R.C.S. and L.R.C.P. London, in 1900, and the F.R.C.S. Ed., in 1906. After acting as Assistant Resident Medical Officer at St. Pancras Infirmary, and as House Surgeon and Anaesthetist in the aural department at King's College Hospital, he went into special practice in London, holding the appointments of Senior Aural Clinical Assistant at King's College Hospital, Surgeon to the Royal Ear Hospital, Soho, and Lecturer to the Deaf and Dumb Institute, Fitzroy Square. His commission as a temporary Captain in the R.A.M.C. was dated 1st January, 1915; he had served as Aural Surgeon, first at the Cambridge

Hospitals, Aldershot, and then with No. 17 General Hospital, B. E. F.

Lieutenant-Colonel Patrick Stanislaus O'Keilly, C.M.G., R.A.M.C., died at Eltham on 18th November, 1918, aged 41. He was born on 25th May, 1877, educated in the School of the Irish College of Surgeons at Dublin, and took the L.R.C.S.I. and L.R.C.P.I. in 1899. Entering the R.A.M.C. as Lieutenant on 17th November, 1899, he became Captain on 17th November, 1902, Major on 17th August, 1911, and Lieutenant-Colonel on 26th December, 1917. He served throughout the South African war from 1899 to 1902, in the Orange River Colony, Cape Colony, and the Transvaal, took part in the actions at Paardeberg, 17th to 26th February, 1900, Poplar Grove, Driefontein, Kari Siding, Vat River, and Zand River, and in those round Johannesburg and Pretoria, and received the Queen's medal with four clasps, and the King's medal with two clasps. He got the C.M.G. on 4th June, 1917. He was Senior Medical Officer at the Royal Arsenal, Woolwich.

Major G. G. Anderson, R.A.M.C., was reported as having died on service, in the casualty list published on 22nd November, 1918. He took a temporary commission as Lieutenant in the R.A.M.C. on 16th August, 1914, and was promoted to Captain after a year's service, and subsequently to a Majority.

Lieutenant-Colonel William Malcolm Sturrock, R.A.M.C. (T.F.), died at Birmingham on 21st November, 1918. He was the son of the late William Sturrock, of Cupan, and was educated at Edinburgh, where he graduated as M.B. and C.M. in 1883. After serving as Assistant Medical Officer of St. Pancras Workhouse and infirmary, he became Medical Officer of the Birmingham Workhouse. He held a commission in the 1st South Midland (Birmingham) Field Ambulance, in which he became Lieutenant-Colonel on 2nd November, 1914, and was recently serving as Officer in Command of the 1st Field Ambulance, 61st South Midland Division.

Surgeon-Lieutenant John Francis Howells, R.N., was reported as having died on service, in the casualty list published on 23rd November, 1918. He took the M.R.C.S. and L.R.C.P. London, in 1917 after which he entered the Royal Navy as a temporary Surgeon, and was recently serving at the Royal Naval Hospital, Chatham.

Surgeon-Sub Lieutenant J. D. Gear, R.N.V.R., was reported as having died on service, in the casualty list published on 23rd November, 1918.

Captain Mysore Seshagiri Krishnaswami Rao, I.M.S., was reported as having died on service, in the casualty list published on 23rd November, 1918. He took a temporary commission as Lieutenant in the I.M.S. on 16th September, 1916, and was promoted to Captain after a year's service.

Captain Harry Dunlop, Canadian Army Medical Corps, died of wounds on 2nd November, 1918, aged 35. He was born at Kingston, Ontario, on 21st October, 1883, and educated at Queen's University, Kingston, where he graduated in Medicine. He came to England in the Canadian A.M.C. in September 1916 and in November 1917 went to France as Medical Officer to the 102nd Canadian Battalion, with which he was serving when killed.

Captain Edward Dawson Keane, R.A.M.C., was reported as having died on service, in the casualty list published on 23rd November, 1918. He was educated at Aberdeen, where he graduated as M.B. and Ch.B. in 1901, after which he went into practice at Banff, where he was Assisting Visiting Physician of the County Asylum, Assistant Surgeon of the Chalmers Hospital, and Assistant Physician of the Banff Dispensary. Later he removed to London, and was in practice in North Kensington when he took a temporary commission as Lieutenant in the R.A.M.C. early in 1917. He was promoted to Captain after a year's service.

Lieutenant-Colonel Mathew Holmes, New Zealand Medical Corps, died at Wellington, New Zealand, on 15th November, 1918. He was the son of James S. Holmes, of Wellington, and was educated at Edinburgh, where he graduated as M.B. and Ch.B. in 1902, and as M.D. in 1908, also taking the F.R.C.S. (Edin.) in 1905. After acting as Resident Medical Officer of St. Mary's Hospital for Women and Children, Manchester, he returned to New Zealand, and went into practice at Wellington, where he was Honorary Physician to the Wellington Hospital. He joined the New Zealand forces early in the way and was promoted to Lieutenant-Colonel in 1916.

Dr. Alexander Campbell Nicholson McHattie, Medical Officer of Zanzibar, died there of pneumonia after influenza on 17th November, 1918. He was educated at Edinburgh, where he graduated as M.B. and Ch.B. in 1900, also taking the D.P.H. at Cambridge, with distinction in Hygiene, in 1911, and the diploma in Tropical Medicine and Hygiene in 1912. After serving for some time as Chief Medical to the Government of the Bahamas Islands, West Indies, he joined the West African Medical Staff, and served in Nigeria. He had recently been appointed to Zanzibar.

Captain Robert Ferguson Copland, R.A.M.C., who was reported as missing on 21st March, 1918, has now been reported by the Geneva Red Cross as killed on that date. He was 25 years old, and was the youngest son of the late James Copland, of Cromarty. He was educated at Aberdeen

where he graduated as M.B. and Ch.B. in 1915, and immediately afterwards took a temporary commission in the R.A.M.C., being promoted to Captain after a year's service.

Captain Maurice William Holt Miles, R.A.M.C. (S.R.), died at Streatham on 25th November, 1918, of pneumonia after influenza, aged 25. He was the son of W. Miles, and was educated at Merchant Taylor's School, and of St. Thomas' Hospital where he gained a scholarship. He joined the army at the beginning of the war and served as a combatant in France, Gallipoli, Egypt and India, after which he was released from service to complete his medical studies. In January 1917 he took the M.R.C.S. and L.R.C.P. London, subsequently graduating as M.B. (Lond.). After qualifying he served as House Physician at St. Thomas', and then joined the R.A.M.C. Special Reserve as Lieutenant, but soon after his promotion to Captain was invalided for ill health.

Captain Geoffrey Lamb Maule, R.A.M.C. (S.R.), died of pneumonia at Baghdad on 15th November, 1918, aged 26. He was the only son of the late Dr. William Maule, of Birkdale, Southport, and was educated at Shrewsbury, at Christi College, Cambridge, where he graduated as B.A. and at Manchester University, and took the M.R.C.S. and L.R.C.P. (Lond.) in 1916. After acting as House Surgeon of Manchester Royal Infirmary, he joined the Special Reserve of the R.A.M.C.

Captain Bertram Walter Cherrett, East African Medical Force, died of pneumonia after influenza at Nairobi, British East Africa, on 4th November, 1918. He was educated at St. Bartholomew's Hospital, and took the M.R.C.S. and L.R.C.P. (Lond.) in 1906, and the D.P.H. in 1909, also graduating as M.B. and B.S. (Lond.), with honours, in 1907. After acting as Assistant Medical Officer of Plaistats Hospital, he entered the East African Medical Service, in which he held the appointment of Health Officer of Nairobi, the capital. He got the temporary rank of Captain in the Army on 19th August, 1914.

Major Harold Widdington Sykes, R.A.M.C., was reported as having died on service, in the casualty list published on 29th November, 1918. He was educated at the University of Durham College of Medicine, and graduated as M.B. and B.S. (Durham) in 1909, and as M.D. in 1912. He then went to South Africa, and after acting as Resident Medical Superintendent of Guy's Hospital, Pietermaritzburg, Natal, took up the post of Assistant Medical Officer to the Randfontein Estates Sick Fund in the Transvaal. He took a temporary commission as Lieutenant in the R.A.M.C. on 7th June, 1915, and was promoted to Captain after a year's service, and subsequently to Major.

Captain Samuel Wandrope Mathews, R.A.M.C., was reported as having died on service, in the casualty list published on 19th November. He graduated as M.B., B.Ch. and B.A.O. of the National University of Ireland in 1913, took a temporary commission in the R.A.M.C. in September 1917, and was promoted to Captain after a year's service.

Captain C. R. Lister, Australian Army Medical Corps, was reported as having died on service, in the casualty list published on 29th November 1918.

Surgeon Sub Lieutenant Eugene A. Pearson, R.N.V.R., was reported as having died on service, in the casualty list published on 29th November 1918.

Lieutenant-Colonel James More Reid, R.A.M.C., retired, died suddenly on 18th November, 1918, aged 62. He was born at Newton-Stewart, Wigtownshire, on 29th January, 1856, and educated at Edinburgh, where he graduated as M.B. and Ch.M. in 1878, and as M.D. in 1880. He entered the R.A.M.C. as Surgeon on 2nd February, 1884, became Major on 2nd February, 1896, and Lieutenant-Colonel on 2nd February, 1904, retiring on 29th January, 1911. He served in the Tirah Campaign on the North-West Frontier of India in 1897-8, and in the third China war in 1900, receiving the medals, and rejoined for service in the present war on 17th January, 1915. He was a fellow of the Royal Geographical Society, and of the Institute of Public Health.

Captain Hill Wilson White, R.A.M.C., was reported as missing from 12th April, 1918, and is now presumed killed on that date. He was the fourth son of the very Revd. F. W. White, Dean of Christchurch, Dublin, and graduated as M.B., B.Ch. and B.A.O. of the National University of Ireland in 1910, from the Medical School of the R.C.S.I. After acting as Resident Anaesthetist, Senior House Surgeon, and Casualty Officer of the Metropolitan Hospital, Dalton, and as Assistant Medical Officer of the Manor and Long Grave Asylum at Epsom, he held the post of Assistant Medical Superintendent of the Paddington Infirmary when the war began, and then took a temporary commission as Lieutenant in the R.A.M.C. on 10th September, 1914. He was promoted to Captain after a year's service, and was wounded at Ypres in December 1915. His younger brother, Second Lieutenant Gerald J. D. White, Royal Irish Regiment, was killed in the battle of the Somme in July 1918.

Captain Winifred Smyth Macdonnell, Canadian Army Medical Corps, died on service on 15th November, 1918. He

was born at Port Hood, Nova Scotia, on 25th December, 1888, and educated at Dalhousie University, Halifax, where he graduated in medicine in 1910. At the beginning of the war he served in the Royal Navy for seven months and then for a year at the front as a temporary officer of the R.A.M.C. He joined the Canadian A.M.C. in August 1916, served with the Duchess of Connaught's Hospital at Taplow, and afterwards in the London area, and was appointed a D.A.D.M.S. in January 1918.

Surgeon Lieutenant William Howard Pickup, R.N., died at Eston Hospital, Middlesbrough, of pneumonia after influenza, on 27th November, 1918. He was the second son of Dr. W. J. Pickup, of Coventry, was educated at Birmingham University, and took the M.R.C.S. and L.R.C.P. (Lond.) in 1915, after which he took a temporary commission in the Navy.

Assistant Surgeon Arthur Randolph Easdon, I.S.M.D., died of pneumonia, on active service, on 10th September, 1918. He was born on 16th December, 1892, and entered the I.S.M.D. on 20th April, 1914.

SURGEON-MAJOR NOTTIDGE CHARLES MACNAMARA, Bengal Medical Service, retired, died at Chorley Wood Lodge, Rickmansworth, Herts, on 21st November, 1918, aged 86. He was born on 14th October, 1832, the son of Daniel Macnamara, Surgeon, and took the M.R.C.S. in 1854, also the F.R.C.S. in 1875, and the F.R.C.S.I. in 1887. Entering the I.M.S. as Assistant Surgeon on 4th November, 1854, he became Surgeon on 4th November, 1866, Surgeon-Major on 1st July, 1873, and retired on 15th April, 1876. He was for several years Civil Surgeon of Muzaffarpur, and afterwards Professor of Ophthalmic Surgery in Calcutta. During his service in the capital he organised and founded the Mayo Hospital, of which he was the first Superintendent, that post having ever since been held by the Ophthalmic Surgeon. He served in the Sonthal Rebellion of 1855-56. During the Mutiny he was Medical Officer of the Tirhut Volunteers, but did not see active service in the campaigns. After his retirement he became Surgeon and Lecturer on Clinical Surgery at Westminster Hospital, and Surgeon to the Royal Westminster Ophthalmic Hospital, and since his retirement from active work had been Consulting Surgeon to both these institutions. He was a Member of the Council of the Royal College of Surgeons from 1885 to 1901, and Vice-President in 1893 and 1896; and in 1901 he delivered the Hunterian oration. He was throughout his life a voluminous author, his most successful works being *Lectures on Diseases of the Eye* (1866, fifth Edition 1891), *Lectures on Diseases of Bone* (1873, third Edition 1887), and *History of Asiatic Cholera* (1876, three Editions). He was also the author of *The Story of an Irish Sept* (1900), *The Origin and Character of the British People* (1900), wrote the articles on Cholera and Tetanus in the first Edition of Quain's *Dictionary of Medicine* (1882), and those on Cholera and Leprosy in Davidson's *Hygiene and Diseases of Warm Climates* (1893), and edited the *Indian Medical Gazette* from 1871 to 1873.

SUBJECT to His Majesty's approval and with effect from the 15th August, 1918, Lieutenant-Colonel Joseph Kinneer Close, M.D., is promoted to the rank of Colonel, *vice* Colonel Harold Hendley, M.D., K.H.S., promoted to the rank of Major-General.

Colonel Close's tenure of appointment will reckon from the 8th November, 1918.

SUBJECT to His Majesty's approval, the following temporary Lieutenants to be temporary Captains, with effect from the dates specified:—

Narayan Mahade Bodas, M.B., 7th October, 1917; Peston Byramji, 15th December, 1917.

INDIAN DEFENCE FORCE.

Medical Corps.

THE undermentioned are granted temporary commissions, subject to His Majesty's approval, with effect from the dates specified:—

To be Major.

Edward Albert Houseman, 1st April, 1917.

To be Lieutenants.

Charles Edwin Percy Forsyth, 1st April, 1917; Charles Ainslie Stone, 6th December, 1918.

INDIAN MEDICAL SERVICE.

SUBJECT to His Majesty's approval, Lieutenant-Colonel George William Jenney, M.B., has been permitted by the Right Hon'ble the Secretary of State for India to retire from the service, with effect from the 4th October, 1918.

LIEUTENANT-COLONEL W. D. HAYWARD, M.B., I.M.S., a Medical Store-keeper to Government, is posted to the Medical Store Depot, Calcutta, with effect from the 1st December, 1918, and under further orders.

HIS Excellency the Governor in Council is pleased to appoint Major A. W. Overbeck-Wright, M.B., I.M.S., to act as Superintendent, Central Lunatic Asylum, Yeravda, and Medical Officer, Yeravda, Central Prison, during the absence of Major W. S. J. Shaw, I.M.S.

THE following notification by the Government of India, Home Department (Medical), is republished :—

No. 2202, dated the 29th November, 1918.

The services of Major A. F. Hamilton, M.B., F.R.C.S., I.M.S., are replaced at the disposal of the Government of Bombay, with effect from the date on which he was relieved of his military duties.

MAJOR D. P. JOHNSTONE, R.A.M.C., is appointed Surgeon to His Excellency the Governor of Bombay from the forenoon of the 23rd November, 1918, *vice* Captain C. M. Rigby, R.A.M.C., vacated.

THE services of Major W. S. J. Shaw, M.D., B.Ch., B.A.O., I.M.S., are placed temporarily at the disposal of the Government of India for employment under the Government of Burma.

HIS Excellency the Governor in Council is pleased to appoint Captain F. C. Fraser, I.M.S., to act as Personal Assistant to the Surgeon-General with the Government of Bombay, in addition to his military duties. *vice* Captain A. G. Tresidder, I.M.S., transferred, pending further orders.

THE King has approved the grant of the temporary rank (as shown below) in the I.M.S. to the following gentlemen :—

To be temporary Major.

Percy Charles Woollatt, 21st May, 1917.

To be temporary Lieutenants.

Nariman Sorabji Kotwal, 6th November, 1917; Kaikhusroo Rustomji Dalal, 1st December, 1917; Susanta Kumar Sen, 8th December, 1917; Kantilal Kalyanji Mankodi, 12th December, 1917; Gopal Narayan Khanna, 16th December, 1917; Amar Nath Mandhok, 17th December, 1917; Bantwal Shankar Rao, 19th December, 1917; Waris Khan, 20th December, 1917; Eustace Trevor Neave Taylor, 2nd February, 1918; Keki Sorabji Bhiwandiwalla, 15th March, 1918; Keith Montague Woodruff, 19th March, 1918; Daya Ram Thapar, 25th March, 1918; Albert Victor Lopes and James Henry Barrett, 2nd May, 1918; Shaikh Ghulam Mohamed and George Patrick de Sibra, 3rd June, 1918; Jugul Kishor Adhya, 8th June, 1918; Yedatore Venkaba Krishnamoorthy, 6th July, 1918.

ELECTRIC lighting of wards of British troops' hospitals in India.

It has been decided to amend the scale of electric lighting in the wards of British troops' hospitals in India as follows :—

One fixed lamp will be provided for every six beds, with a minimum of one per ward. As a general rule, these lamps should be of the bracket pattern fixed on the side walls. In addition, one portable lamp and a wall plug should be provided for every four beds with a minimum of one per ward.

DEFINITION of "pay proper" of civil sub-assistant surgeons on military duty for purposes of calculation of the special field allowance of 2½ per cent.

It has been decided that for purposes of calculation of the special field allowance* of 12½ per cent. to civil sub-assistant surgeons, their civil pay plus military pay, exclusive of any field service batta or other allowances, should be taken as their "pay proper."

"PAY of Colonels, Army Medical Service, who on promotion to that rank are temporarily in excess of the authorised establishment.

With the approval of the Right Hon'ble the Secretary of State for India it has been decided that when the promotion of an officer to the rank of Colonel, Army Medical Service, involves a temporary excess in the authorised establishment, the salary of the officer should be fixed at Rs. 1,800 per mensem, with effect from date of promotion irrespective of how the officer is employed."

There are cases in the I.M.S. to which this rule, we presume, also applies. If not, why not?

DR. R. W. FISHER, M.B., B.Ch., D.P.H. (R.U.I.), Director, Vaccine Institute, Belgium, has been granted, with effect from the 1st October, 1918, privilege leave of absence for one month and four days combined with furlough on medical certificate for such period as will bring the total amount of combined leave up to three months.

ASSISTANT SURGEON M. J. MISTRY, L.M. & S., acting Civil Surgeon, Ratnagiri, has been granted privilege leave of absence for three months, with effect from the 15th October, 1918, or from the date of relief.

HIS Excellency the Governor in Council is pleased to appoint Assistant Surgeon J. F. Henriques, L.M. & S., to act as Civil Surgeon, Ratnagiri, during the absence on leave of Assistant Surgeon M. J. Mistry, L.M. & S.

THE services of Captain D. V. O'Malley, M.B., R.A.M.C. (T.C.), are placed temporarily at the disposal of the Chief Commissioner of Assam until further orders.

THE services of Major A. S. M. Peebles, M.D., I.M.S., are placed temporarily at the disposal of His Excellency the Commander-in-Chief in India, with effect from the 22nd July, 1918.

SUBJECT to His Majesty's approval, Lieutenant-Colonel James Morwood, M.D., I.M.S., Bengal, is permitted to retire from the service on account of ill-health, with effect from the 11th November, 1918.

Colonel Morwood entered the I. M. S. on 30th September, 1886, and has for many years past been a well-known Civil Surgeon. U. P. He has recently been serving in the Indian Troops Hospital at Karachi.

THE Governor in Council is pleased to appoint Lieutenant-Colonel F. H. G. Hutchinson, M.B., C.M. (Edin.), D.P.H., D.T.M. & H. (Cantab.), I.M.S., to act as Inspector-General of Prisons, Bombay Presidency, in addition to his own duties, *vice* the Honourable Lieutenant-Colonel J. Jackson, C.I.E., I.M.S., reverting to Military duty, pending further orders.

Promotion should be rapid in the Jails Department; the following vacancies are now actual or imminent :—

Bengal, *vice* Sir Walter Buchanan, due to retire.

U. P., *vice* Lieutenant Colonel Henderson, due to retire.

C. P., *vice* Colonel W. B. Lane, promoted.

Madras (no permanent appointment since the promotion of Colonel Macnamara).

Bombay, *vice* Colonel J. Jackson, to be promoted.

Bihar and Orissa, *vice* Lieutenant-Colonel Singh, about to take furlough, it is understood.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements, and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to "*The Indian Medical Gazette*," Rs. 14, including postage, in India. Rs. 16, including postage, abroad.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM :—

Lieutenant-Colonel W. D. Sutherland, I.M.S., Calcutta; Lieutenant-Colonel Foulkes, I.M.S.; Major-General P. Hehir, Rawal Pindi; Dr. Pedley, Rangoon; Major-General W. E. Jennings, Bombay; Major A. Nove, London; Dr. Devidasani, Shikarpore; Dr. Tambe; Captain Harries, R.A.M.C.; and Major Holroyd, R.A.M.C.

BOOKS, REPORTS, &c., RECEIVED :—

Collected Papers, Mayo Clinic (1917). W. B. Saunders Co. Major B. D. Basu's Diabetes and its Treatment. Price, Re. 1-8. Panini Press, Allahabad. Journal of Association of Medical Women in India. Prize Essay on Childbirth in India. Dr. F. Curyel. Report of the Mayo Hospital, Jaipur. Sanidad y Beneficencia, Vol. XIX, Cuba. Lieutenant-Colonel Samuel Anderson's *Hints to Dressers*. Thacker, Spink & Co., Calcutta. Camus and Castle's *Re-education of the Married*. Price, 6s. Baillière, Tindall & Cox. Hadyn Brown's *Advanced Suggestion*. Baillière, Tindall & Cox. Price, Rs. 6. Kang's *Collection of Ayurvedic Analysis*. 2nd Edition. Baillière, Tindall & Cox. Price, 21s.

Original Articles.

TENDON TRANSPLANTATION AND FIXATION FOR NERVE INJURIES.

BY R. F. STANDAGE,

LIEUT.-COL., I.M.S.,

Surgical Consultant, East Africa Field Force.

WOUNDS of nerve trunks, with the paralyses resulting therefrom have been numerous during the campaign in East Africa, and the application of the right treatment for each case has been one of the most interesting of the surgical problems submitted to us. The station in life of each patient, his chances of being able to continue treatment after leaving hospital, and his ability or otherwise to get efficient apparatus, have all been factors in deciding on the class of operation applicable.

In the operative treatment of nerves and paralysed muscles in this Force we have been guided by the work of Robert Jones on poliomyelitis, and we have successfully applied his methods of tendon transplantation and fixation in cases unsuitable for nerve suture, or in cases in which nerve suture had failed. Many such operations on paralysed and useless limbs have been carried out, and though none can be said to have actually failed, there is no doubt that our later cases have been more uniformly successful as regards end results. The production of these improved results has been attained by certain modifications in our original methods, and I will endeavour to describe those modifications in the text and to explain their rationale.

Tendon Transplantation.—This operation has been carried out in this Force for three types of nerve injury:—

- (a) Irreparable injury to the musculo-spiral nerve with wrist-drop.
- (b) Similar injury to the median nerve.
- (c) Injury to the musculo-cutaneous nerve in the leg with paralysis of the peronei muscles and resulting pes equino-varus.

Before describing the operations carried out, and the modifications which we have found useful, let me state it is my opinion, and that of the officers working with me, that in certain disabilities, due to severance of a nerve trunk, and especially in the paralysis due to division of the musculo-spiral nerve, one is justified in recommending the operation of tendon transplantation in preference to that of secondary nerve suture. I think that this is probably the case even for British officers and men, while for the Indian and African soldier, and the porter, who want useful

hands quickly, and who cannot, and in most cases certainly will not, carry out the long months of treatment essential for a successful result after nerve suture, I am certain that tendon transplantation is the operation of election. As regards usefulness to the Force, too, tendon transplantation is preferable as it will return men with useful hands to the ranks in two or three months. Such a result is impossible after nerve suture.

In comparing the two operations for a case of drop-wrist the proposition which the surgeon can lay before his patient is as follows:—By nerve suture a perfect result is probable, but not certain, the result will be obtained after a year or even two years, during which time the hand must be kept in continual extension, and electric treatment and massage must be energetically carried out. In the case of failure the operation of tendon transplantation is still available. By tendon transplantation a useful hand can be guaranteed after two or three months. It will not be a perfect hand, but it will do for holding and using a gun or rifle, digging, driving a motor car, and manual labour not involving fine movements of the fingers. I imagine that most men would choose the shorter time of waiting and the less perfect hand. A musician or a surgeon would consider the longer time not ill spent if he regained full use of his highly trained hand, but the majority of men would ask for quicker and more certain results.

That nerve suture, either primary or secondary, will certainly fail unless relaxation of the paralysed muscles is maintained, and may fail even with approved treatment, has been amply demonstrated to us by cases which have come into the base hospitals here for paralysis due to wounds in the early part of the campaign. The cases of two prisoners of war illustrate failure from lack of treatment after nerve suture. Both were wounded at the battle of Tanga in November, 1914, in both cases immediate suture of the musculo-spiral nerve was done by German surgeons, and from their account no further treatment of any sort was adopted. They were both taken prisoner some years later and eventually reached the Prisoners of War Hospital at Daressalaam. Both these prisoners had typical dropped wrists and absolutely useless hands, and the scars of their wounds, and of the operations for suture of the trunk of the musculo-spiral were obvious in their upper arms. In one case a further operation of tendon transplantation had been attempted. The palmaris longus had been transplanted into the extensor tendons of the fingers, not of the thumb. This operation had absolutely failed to give any power of extension of the wrist, and indeed it could hardly be expected to do so. In both these cases the complete operation as described below was performed and each man has now a useful hand

with power to extend and support the wrist, extension of the fingers and extension and abduction of the thumb.

Failure after primary nerve suture with continued treatment was illustrated by the case of a corporal of the Gold Coast Regiment, wounded some two and a half years before. Immediate suture of the divided musculo-spiral nerve was done, and extension and massage of the paralysed muscles carried out systematically. The extensors remained paralysed. The hand was useless. Tendon transplantation was carried out, and he left for West Africa, rejoining his unit for duty.

The uselessness of the hand from dropped wrist is due to the inability to extend the hand and keep it extended to grasp an object, and to the inability to extend the thumb and to abduct it from the fingers preliminary to grasping. If these two disabilities can be alleviated a useful hand is obtained. A certain degree of finger extension by the lumbricales persists in every case of drop-wrist, but unless the paralysed radial and ulnar wrist extensors, and the thumb extensors can be made good, no useful result can be expected.

To attain these objects the following transplantations have been carried out in cases of musculo-spiral paralysis:—

(a) The pronator radii teres, detached from its radial insertion, is transplanted into the long and short radial extensors.

(b) The flexor carpi radialis tendon, divided at the wrist, is brought round the radius, over the wrist extensors and transplanted into the tendons of the extensores ossis metacarpi, primi and secundi internodii pollicis, and the extensor indicis.

(c) The flexor carpi ulnaris tendon, divided at the wrist, is brought round the ulna, and transplanted into the tendons of the extensor carpi ulnaris and the extensors of the three inner fingers.

The details of these procedures, as we have carried them out at the base hospitals here, are well shown in the accompanying illustrations.

The operation we now undertake is as follows: The arm is laid on its ulnar side on a small table placed at right angles to the operating table. An incision through skin and deep fascia three inches long is made over the middle third of the radius. The supinator longus and the two radial extensor tendons are recognised and separated, the former being retracted forwards. The radius is now exposed and the tendon of the pronator radii teres recognised by the direction of its fibres. The thick tendon is well separated from surrounding structures by blunt dissection, a large hernia needle passed round it, and it is cut away from its insertion into the middle of the outer surface of the radius. In cutting the insertion free the knife

must be kept close to the bone so that the tendon is cleanly separated. The muscle is then raised slightly from its bed to ensure that it is free. The wrist is then fully extended and held in that position by an assistant, and the extensor tendons having been pulled upwards, the tendon of the pronator teres (which should have a tail-like end, if properly separated from the radius) is applied to the extensor carpi radialis brevior. At the most convenient point an incision is made through the short extensor tendon, and the pronator tendon passed through it. The pronator tendon now lies between the short and the long extensors, and is stitched in position by several fine silk sutures, some of which embrace all three tendons. All bleeding is stopped, the wound stitched, a temporary dressing applied, and the rest of the operation continued. The arm is turned on to its posterior surface. An incision of about one inch is made through skin and fascia over the tendon of the flexor carpi radialis at the wrist. The tendon is freed, an aneurysm needle passed under it and it is pulled forward. By pulling on the tendon at the wrist it can easily be traced in its course up the arm, and a second short incision is made over it about four inches above the former. The flexor carpi radialis tendon is again recognised and freed through the upper incision. An aneurysm needle is passed again round the tendon at the wrist, care is taken that the median nerve is not included, and the tendon is divided as near to its insertion as possible.

The arm is now turned on to its anterior surface, sterile swabs being placed over the two small incisions. An incision, three or four inches long, is made from the wrist upwards, over the centre of the posterior surface of the forearm. Through this incision the tendons of the extensor ossis metacarpi pollicis, the extensor primi, the extensor secundi internodii pollicis and the extensor indicis are recognised. When sufficiently separated, a swab is placed over the wound, the arm is turned again on to its posterior surface, the tendon of the flexor radialis found in the upper wound and pulled out from its groove through the skin wound. From the wound on the posterior surface, a long thin pair of forceps is passed under the fascia and pushed out through the upper wound on the flexor surface. The flexor tendon is seized by its end and drawn through to the extensor surface in slanting fashion. Incisions are made in the four extensor tendons previously recognised and the tendon of the flexor carpi radialis is passed through them and stitched to each by very fine silk sutures. (Fig. 2.)

The tendons of the extensor carpi ulnaris and the three inner extensors of the fingers are now recognised and freed. A swab is placed over the long wound on the extensor surface, and the arm

PLATE I.
TENDON TRANSPLANTATION AND FIXATION FOR NERVE
INJURIES.

BY LIEUTENANT-COLONEL R. F. STANDAGE, I.M.S.

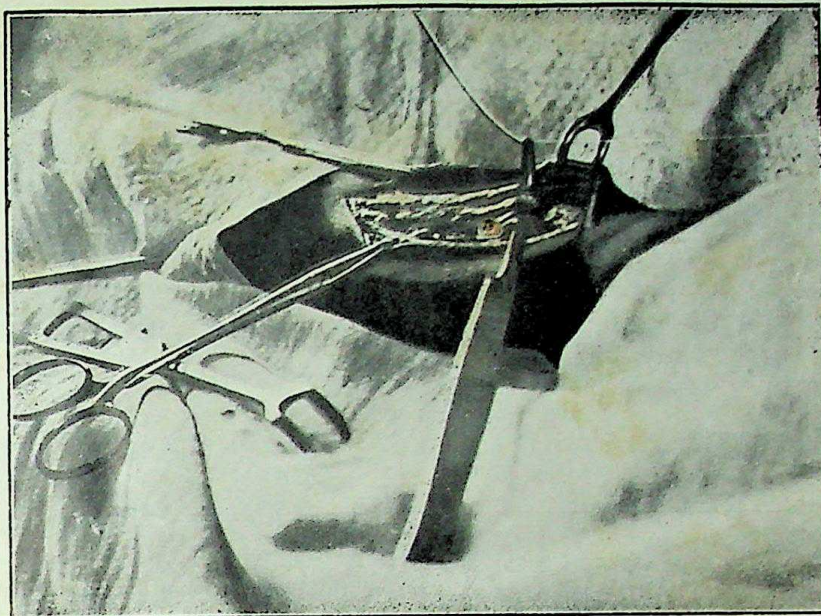


FIG. I.

Tendon transplantation for drop-wrist on right side. The extensors of the thumb, and of the index finger, demonstrated through a longitudinal incision on the posterior surface, and prepared for transplantation of the radial flexor tendon into them.

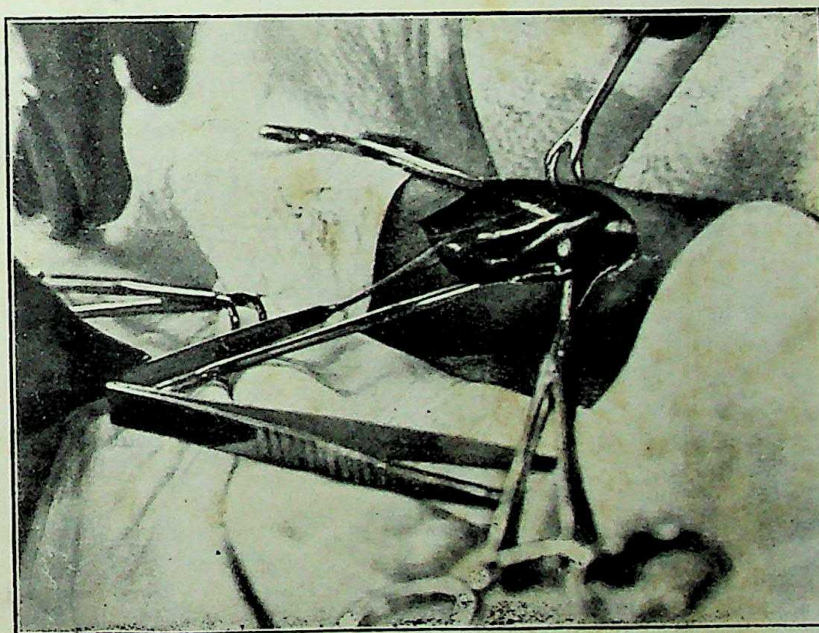


FIG. II.

The flexor carpi radialis tendon brought round the radius and passed through the thumb and index finger extensors; the operation is completed by stitching the flexor tendon to the extensors, and its redundant end, seen in the grasp of the forceps, is cut off.

PLATE II

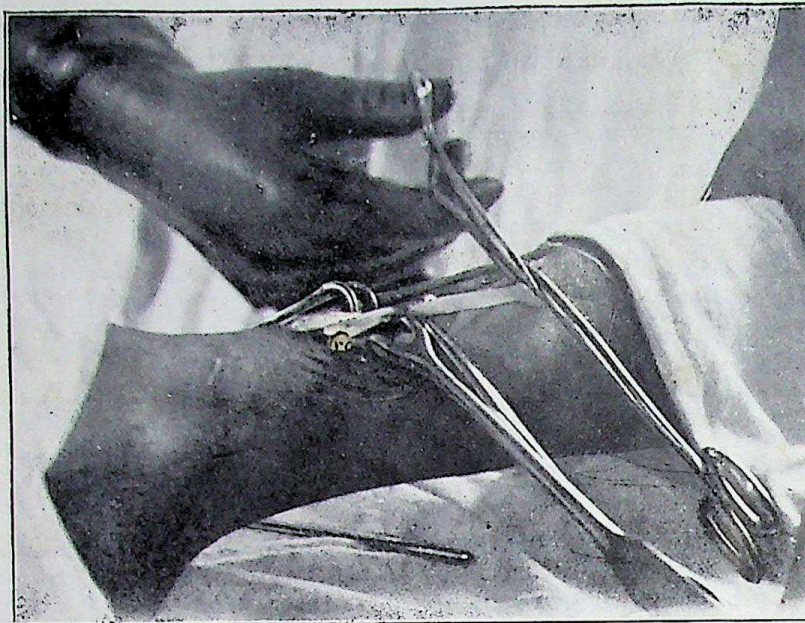


FIG. III.

In paralysis of the peronei group only, the peroneus longus tendon is transplanted into the unparalysed tibialis anticus. In the illustration the peroneus longus tendon of the right side is passed through the anterior tibial tendon ready for stitching, after which the redundant piece held in the forceps is cut away.

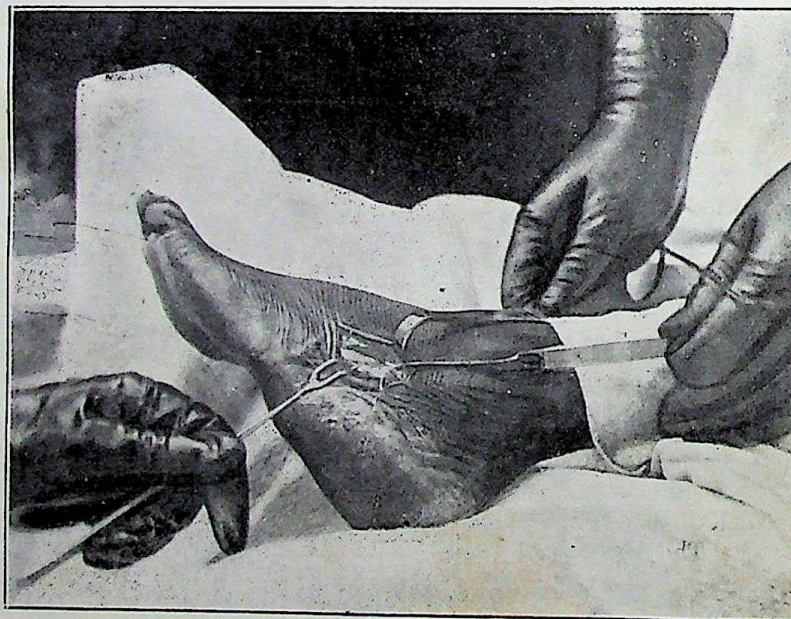


FIG. IV.

The preliminary step in the operation of fixation of the peroneus longus tendon to the left tibia, or transplantation of that tendon into the tibialis anticus. The two peronei tendons are recognised below and in front of the external malleolus. The lower of the two is the peroneus longus.

once more turned with the flexor surface upwards. The flexor carpi ulnaris tendon is treated in the same way as the flexor carpi radialis; divided at the wrist, pulled out through a wound four inches above the wrist, and transferred to the extensor surface by being pulled under the fascia in slanting fashion round the ulna. The ulnar flexor tendon is then attached to the extensor carpi ulnaris and the extensors of the three inner fingers.

The five wounds are stitched, a dressing applied to them and to that over the pronator teres, and the hand is put up on a splint which maintains it in a position of extension.

In our earlier cases we employed for this operation the skin incision described by Colonel Robert Jones, of horse-shoe shape over the extensor tendons, "the convexity of the horse-shoe resting on the back of the carpus, with the two straight sides extending along the radial and ulnar borders of the forearm." A flap was turned back consisting of skin and fascia and all the tendons, both flexors and extensors, were recognised and dealt with through the space thus exposed. Our experience has been that considerable and persistent œdema of the hand resulted, no doubt due to cutting across all the superficial veins and lymphatics. Some patients, too, complained of persistent numbness at the base of the thumb and radial side of the hand. Perhaps we made our flaps too big, but we have had none of the œdema and no anæsthesia since we adopted the single longitudinal incision over the extensor tendons, described above, and the sub-fascial method of dealing with the flexor tendons. I think, therefore, that this modification is worthy of record and recommendation.

We were somewhat disappointed at first that our cases did not regain any useful degree of voluntary wrist extension. The hand could be raised, and held, in straight line with the forearm, but not beyond that. I think this was due to not completely freeing the pronator teres before its transplantation into the radial extensors, and to not including the ulnar extensor in the group into which the ulnar flexor was transplanted. Since adopting these modifications in our technique, the results, as regards wrist extension, have improved. The extensors of the wrist work at a mechanical disadvantage as regards power, and it is essential, therefore, that as much available power as possible should be transferred to them. I consider it highly important that the hand should be held in extension during these transplantations, and that it should be maintained in extension for a fortnight or three weeks after operation. After that training in the use of the hand should begin. It is wonderful how soon the movements of extension of the thumb and fingers are learnt.

For irreparable injury to the median nerve the tendon transplantations advocated by Colonel Robert Jones were carried out in one case, *viz.*, the transplantation of the paralysed outer two tendons of the flexor profundus digitorum into the two inner tendons of the same muscle, supplied by the ulnar nerve. The flexor carpi ulnaris was made to take on the work of the flexor sublimis digitorum by the transplantation of all four tendons of the latter muscle into the tendon of the former. Finally the tendon of the extensor carpi radialis longior, divided near its insertion, was brought round the radius and inserted into the tendon of the flexor longus pollicis. This patient was transferred too early to give a definite statement as to the result.

For division of the musculo-cutaneous nerve in the leg, with paralysis of the peronei, we have carried out transplantation of the tendon of the peroneus longus into the outer side of the active tibialis anticus. The tibialis anticus thus becomes a bifid tendon pulling up the outer and inner sides of the foot at the same time.

The initial stages of this operation are the same as those for fixation of the peroneus longus to the tibia described below. The tendon is recognised and divided in the leg about 6 inches above the outer malleolus. It is again found in the outer side of the foot well in front of the malleolus. An incision about 3 inches in length is now made through skin and fascia in the anterior mid-line of the leg about 4 inches above the ankle. The thick tendon of the tibialis anticus is isolated. The peroneus longus tendon is pulled out through the incision on the outer side of the foot and transferred sub-fascially to the outer side of the tibialis anticus tendon, as shown in the illustration (Fig. 3). The tibialis anticus tendon is tunnelled to receive the other, the foot is well extended, the peroneal tendon passed through the tunnel, drawn taut and stitched in position. The results of this operation have been excellent, the patient being able to bring the sole squarely to the ground, instead of walking on the outer edge of the foot. He has good power of extension at the ankle, though of course very little power of eversion. He can walk and run as well as ever, and will return as a useful soldier to the ranks.

The operation usually recommended for paralysis due to cutting of the musculo-cutaneous nerve in the leg is the transplantation of the insertion of the tibialis anticus from the inner to the outer side of the foot. I venture to recommend the modified operation I have described above as an improvement. I am not aware that it has been described or suggested before, and our experience is that by it the inversion of the foot is cured and the balance of the foot restored, without the disadvantage of weakening the inner

arch of the foot by separation of the anterior tibial tendon from its normal insertion.

Tendon Fixation.—This operation has been performed many times in this force, for various conditions, but it has been chiefly used for irreparable injury to the external popliteal nerve with consequent drop-foot.

The technique we have employed has been that described by Robert Jones, with trifling modifications. The stages of the operation are well shown in the photographs.

The details are as follows: The two peroneal tendons are isolated and recognised through a short incision below and in front of the external malleolus. The lower tendon is that of the peroneus longus. The peroneus tendon is again found and isolated through an incision about 6 inches above and slightly behind the external malleolus. The tendon is brought out through this upper incision and divided.

An incision 3 inches long is now made 4 inches above the ankle along the anterior border of the tibia. The periosteum is divided within the limits of the incision and reflected from the internal and external surfaces of the bone. The tibialis anticus muscle and tendon is retracted to the outer side. With a burr a hole is drilled through the tibia large enough to admit the peroneal tendon.

A small incision is now made through skin and fascia just above the anterior annular ligament and just external to the tendon of the tibialis anticus.

We now turn again to the small incision on the external side of the foot. A broad hernia needle is passed round the long peroneal tendon and it is pulled down out of its groove completely outside the wound. From the small incision in front of the ankle a long pair of forceps is passed under the fascia and annular ligament to emerge at this small wound on the external side of the foot.

The end of the tendon is grasped and drawn through. From the incision over the tibia the forceps is again pushed down under the fascia to emerge at the wound in front of the ankle. The end of the tendon is again grasped and drawn up into the wound over the tibia. The tendon is now passed through the hole in the tibia, the foot is pushed into an extended position, and the loop of the peroneus longus drawn taut, and stitched firmly to itself and to the periosteum. The tibialis anticus tendon is divided, drawn firmly upwards and stitched over the loop and the upper end brought down and stitched over all.

We find the slight modification of making a loop of the peroneus tendon an improvement on merely stitching it to the periosteum, or fixing it with a tack. By the loop method it can be drawn taut, and the resulting anterior ligament

is more likely to support the foot in the required position. It is, perhaps, worthy of note that we have found it advisable to make all the preparations for the reception of a tendon to be transplanted or fixed *before* that tendon is pulled out of its groove into the air. If left in its normal groove till the last moment it will not be injured during the preparation of its new position, and is less likely to form adhesions to surrounding structures along its new groove.

For irreparable complete division of the trunk of the sciatic nerve a series of operations have resulted in giving a dependable limb. The ankle is usually found to be fixed in a position of equinus, and the paralysed hamstrings contract, fixing the knee-joint in a semi-flexion. For such a case the following operations were carried out: (a) Lengthening of the tendo-achillis, (b) Fixation of the peroneus longus and tibialis anticus as described above, (c) Tenotomy of the hamstrings and, finally, (d) Resection of the knee-joint to produce a stiff joint. The case I have in mind, a carrier, was many months in the jungle before he was found and passed through various field units to the base. It was then a matter for consultation as to whether amputation was not the only course of remaining. I decided against it, and he has now a natural peg-leg, which he will soon learn to use for carrying himself and perhaps a light load. I hardly think he would do so well on an artificial peg-leg, even if he could have got one, and of course a fixation apparatus for the knee-joint or ankle-joint was out of the question.

In paralysis due to injury of the ulnar nerve an attempt to unite the divided ends has been made in each case in the base hospitals here. This was done in view of the grave crippling produced by this injury, due to paralysis of the intrinsic muscles of the hand. No tendon transplantation will modify this, and the only hope is successful nerve suture. Luckily the ulnar nerve lends itself to such treatment very readily. It is easily accessible along its whole course, and by flexion of the wrist, straightening the elbow, or even altering the course of the nerve from behind to in front of the elbow, gaps of $1\frac{1}{2}$ to 2 inches may be overcome and the nerve ends brought together. During the past six months, I have carried out several secondary nerve sutures for the ulnar nerve, using subcutaneous fat to surround the ends after union and to prevent their adhesion to surrounding tissues. It is too early yet to report on the results of these operations, but I have hopes that they will all do well, as in each case I can trace the nerve in its new course, and there is no loss of continuity. In one case of an accident resulting in division of both ulnar and median nerves, primary suture was successfully carried out, and within a month the patient was able to tell which finger was lightly touched,

PLATE III.

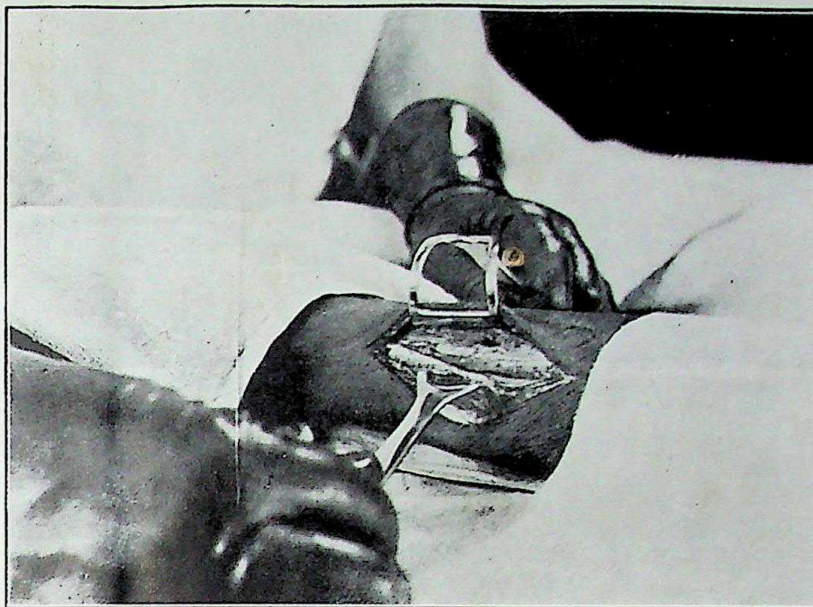


FIG. V.

The tibia is exposed and tunnelled for reception of the peroneus longus.

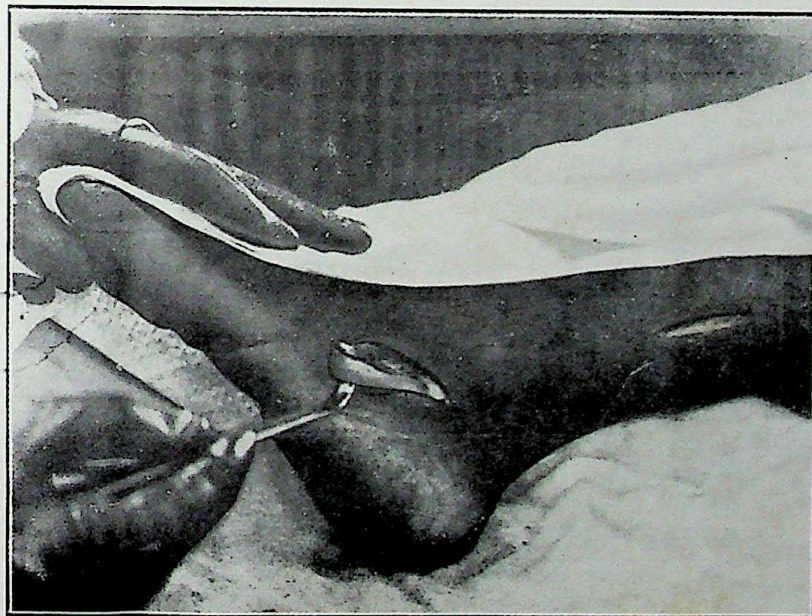


FIG. VI.

The long peroneal tendon is recognised and divided through an incision six inches above the outer ankle, a hook is passed round it at the ankle and traction applied.

PLATE IV.

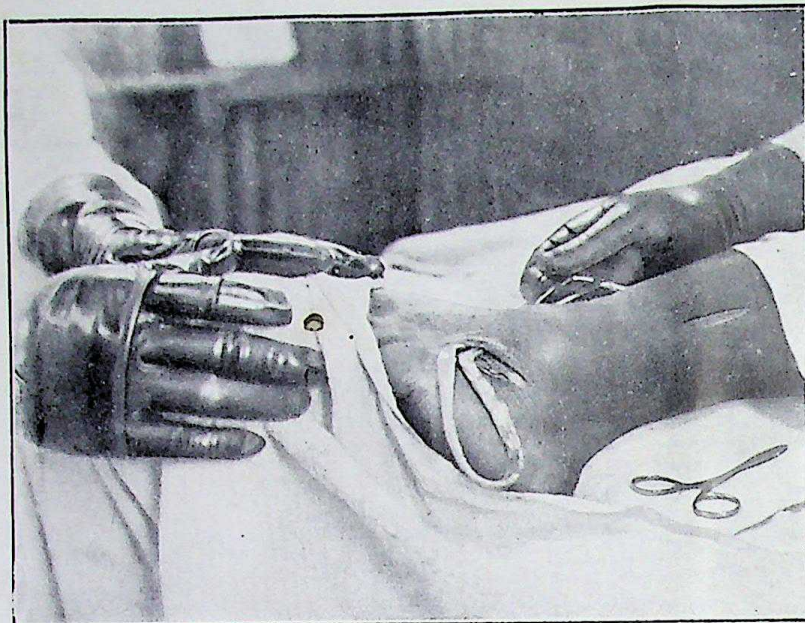


FIG. VII.

The peronea tendon is drawn completely out through the wound below the external malleolus. A sinus forceps is passed under the fascia from above the anterior annular ligament. The end of the tendon is grasped and drawn completely through.

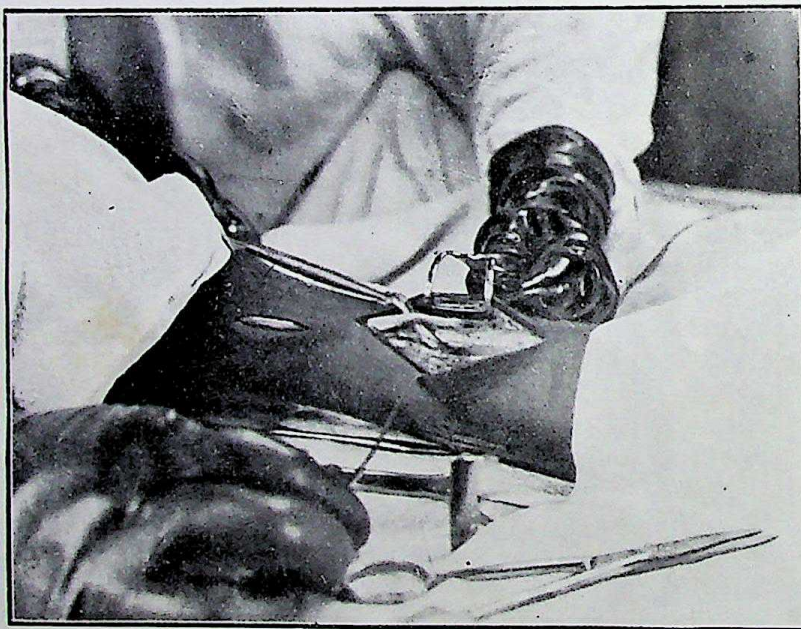


FIG. VIII.

The sinus forceps is again passed down from the incision over the tibia, and the peroneus longus tendon drawn up and passed through the tunnel in the tibia. In the figure it is shown held ready to be fixed by stitching to itself and the periosteum.

with his eyes shut. He had no return of muscular power, but the abnormally rapid return of sensation justifies a hope that muscular power will be quickly restored.

I wish gratefully to acknowledge the untiring assistance I have received from the officers working in the Surgical divisions of the Base Hospitals in this Force, Captain J. J. Liston, I.M.S., and Captain Tudor Thomas, R.A.M.C., of the 3rd African Stationary Hospital; Captains A. H. Bone and W. Hogarth Kerr, R.A.M.C., of the Carrier Hospital; Captain Steele, R.A.M.C., of the Prisoners of War Hospital and Captain J. B. Hume, R.A.M.C., 84th General Hospital, all carried out many of the operations described above. To Captain Ryan, R.A.M.C., 84th General Hospital, also, my thanks are due for the care and trouble he took in producing the photographs appended.

To Colonel Robert Jones we are all indebted for the inspiration to attempt alleviation of these crippled limbs, and such success as we have attained is attributable to his work.

Since writing the foregoing paper, I have had the opportunity of operating upon a very complete and distressing case of wrist-drop. The patient, a Nursing Sister, was given an intramuscular injection of quinine for malaria early in the campaign. By mischance the point of the needle, intended for the left triceps muscle, pierced the musculo-spiral nerve, and the dose of quinine was injected into the nerve sheath. The patient experienced great pain down the outer side of the fore-arm, and her wrist immediately dropped.

Two operations, at intervals of about a year, were performed for her relief, by surgeons not connected with the Service. At the first (April 1917) the musculo-spiral nerve was exposed, a thickened and sclerosed lump was excised from it, and the ends sutured together. In spite of correct position being maintained, and massage, no improvement took place, so, in March 1918, a tendon transplantation was attempted. This operation carried out the transference of the flexor carpi radialis tendon into the two outer thumb extensors at the wrist, and the transfer of the ulnar extensor—also at the wrist. The only appreciable result of this procedure, when I first saw the case, in November 1918, was that the two flexors still acted as flexors, but were inserted into the extensor tendons instead of bone. No wrist or finger extension was possible, and the hand was useless.

The patient appeared before a Board, and she was strongly recommended to have a further operation on the lines described in this paper. To this she agreed and I carried it out on December 18, 1918.

The result of this operation was the most satisfactory of any I have seen. Three weeks after the operation, when the extension splint was

removed for the first time, she had power of wrist and finger extension. She was ordered to continue to wear the splint at night, and to work the hand lightly during the day—with daily massage. Five weeks after the operation she could sew, hold needles for threading, use a fork, and, with great pride, demonstrated to me and to the members of her Board, that she could once again play the piano.

FURTHER EXPERIENCE OF SODIUM HYDNOCARPATE (SODIUM GYNOCARDATE A) AND A TRIAL OF SODIUM MORRHUATE IN LEPROSY.*

BY SIR LEONARD ROGERS, M.D., F.R.C.P., F.R.C.S.,

LIEUT.-COL., I.M.S.

WITH NOTES OF CASES

BY JOGESH CHANDRA MUKERJEE,

ASST.-SURGN., I.M.S.

A YEAR and a half ago I recorded(1) two years' experience of injections of sodium salts of the unsaturated fatty acids of chaulmoogra oil in 26 cases of leprosy, and showed that mixtures of the higher melting-point acids, which I termed "gynocardate of soda A" yielded more active sodium salts than did the lower melting point ones (37°C.), first called "gynocardic acid" by Moss.(2) H. C. Brill(3) has recently shown that both true chaulmoogra oil obtained from the seeds of *Taraxtenos kurzii* and also those derived from three varieties of *hydnoarpus* contain hydnoarpic and chaulmoogric acids, which are not found in the seeds of *Gynocardia odorata*, so the term gynocardic acid is a misnomer. The more effective higher melting point preparations consist chiefly of hydnoarpic (melting point 59-61) and chaulmoogric (melting point 68) acids with sufficient of the lower melting point ones to make the salts soluble in water. I subsequently tried the effect of chaulmoogric acid by separating it in a pure state and adding sufficient of the low (37°C.) melting point acids to render the salts of the mixture soluble, but found it presented no special advantages in the treatment of leprosy. Dr. Sudhamoy Ghosh, D.Sc., working under a grant very kindly supplied by the Indian Research Fund Association, has continued his chemical investigations of these oils and has found that while the oil of *Taraxtenos kurzii* contains only approximately 5.5 per cent. of hydnoarpic acid, that of *Hydnoarpus wightiana* contains about 10 per cent. As my experiments indicate that the sodium salt of hydnoarpic acid is probably most active in leprosy, I have treated

* Read before the medical section of the Asiatic Society of Bengal, March 12, 1919.

a further series of cases with a preparation made of *Hydnocarpus wightiana* oil consisting mainly of sodium hydnocarpate with sufficient of the lower melting-point acids to make it soluble, but also containing a little sodium chaulmoograte, as these acids are so closely related that they can only be separated in pure form by very prolonged fractionation. This preparation, as well as that which in my former paper I called "sodium gynocardate A," will in future be referred to by the more correct term hydnocarpate of soda. The melting point of the mixture of fatty acids from which the present preparation is made is approximately 48°C ., and the records below of cases 27 to 41, show that the products obtained from the cheaper and more easily obtainable *hydnocarpus* oil are at least as efficient in leprosy as that got from true *chaulmoogra* oil derived from the *Taraxogenos kurzii*, while a larger proportion of the most active hydnocarpic acid is obtained from the first-named oil.

Table I summarizes the main points in the cases, while brief notes of each are also given to enable a clear idea to be obtained of the nature of the cases and of the progress resulting from the treatment. They are arranged in order of the length of the treatment beginning with those who attended for the shortest time. The great reduction in the numbers of the lepra bacilli before and after treatment and their frequent total disappearance is a very satisfactory feature of the series, while the number of cases in which the lesions disappeared in less than a year is also noteworthy. In only one of fourteen cases was but slight improvement obtained. Several ceased treatment because they considered themselves to be well and wished to return to work.

NOTES OF LEPROSY CASES TREATED BY INTRA- VENOUS INJECTIONS OF SODIUM HYDNOCARPATE (SODIUM GYNOCARDATE A.) SECOND SERIES.

CASE 27.

Hindu male, aged 34, with tubercular leprosy of two years' duration. Extensive raised copper-coloured patches on face, ears and extremities containing numerous acid-fast bacilli in them and in the nasal mucus. Diminished sensibility over some patches.

Treatment and Progress.—Intravenous injections of 52°C . melting point preparation in from $1\frac{1}{2}$ to 5 c.c. doses from 8th April, 1918, to 13th June, 1918, $2\frac{1}{4}$ months. The lesions steadily faded and lost their thickened condition and the bacilli disappeared from them. As he now considered himself to be well he ceased attendance, his lesions having disappeared. He has not been seen since.

CASE 28.

Hindu male, aged 52, with maculo-anæsthetic leprosy of fifteen years' duration. Thickened discoloured lesions on face, ears and body. Ulnar nerves thickened, partial anæsthesia of fingers and nails affected. Numerous lepra bacilli in ear tubercle and in nasal mucus.

Treatment and Progress.—Intravenous injections of sodium hydnocarpate 3 per cent. for five months beginning on 8th March, 1918, from 1 to 2 c.c. only as larger doses caused febrile reactions. Febrile and local reaction with increased swelling of the lesions after the second injection soon followed by improvement, which continued steadily. On 16th August, 1918, all the nodules and thickened patches had disappeared, the nasal ulceration had healed, and new nails had grown. The bacilli had disappeared and his general health was considerably improved. He now rejoined his work in another province, and has not been seen since.

CASE 29.

Hindu male, aged 40, with advanced tubercular leprosy of six years' duration. Leonine face with very large nodules on nose, ulceration in nose, fingers and toes swollen and nails partially destroyed. Lepra bacilli in nose and in nodules.

TABLE I.

Leprosy cases treated with sodium hydnocarpate intravenously.

Number of case.	Duration of disease.	Type of disease.	Duration of treatment.	Doses of 3 per cent. solution.	Febrile reactions.	LEPRA BACILLI.		PROGRESS.
						Before treatment.	After treatment.	
27	2 years ...	Tubercular	2½ months...	1½-5 c.c. ...	Nil ...	+	Nil ...	Lesions disappeared.
28	15 " ...	"	5½ " ...	1-2 " ...	Slight ...	+	" ...	Do.
29	6 " ...	"	6 " ...	1-5 " ...	Nil ...	+	Few ...	Much improved.
30	6 months ...	Mixed	7 " ...	2-5 " ...	" ...	+	Nil ...	Do.
31	6 " ...	"	7 " ...	2-5 " ...	Slight ...	+	+	Slight improvement.
32	1 year ...	"	7 " ...	½-3 " ...	" ...	+	Nil ...	Lesions disappeared.
33	6 years ...	"	8 " ...	3-4 " ...	" ...	+	Few ...	Much improved.
34	8 months ...	"	8 " ...	1-5 " ...	" ...	+	Nil ...	Lesions disappeared.
35	2½ years ...	"	8 " ...	2-5 " ...	" ...	+	Few ...	Much improved.
36	2½ " ...	Tubercular	8 " ...	1-5 " ...	Nil ...	+	" ...	Do. Working.
37	7 " ...	"	10 " ...	1-5 " ...	Slight ...	+	Nil ...	Lesions disappeared.
38	1 year ...	"	12 " ...	1-5 " ...	Nil ...	+	" ...	Do.
39	1 " ...	"	12 " ...	1-5 " ...	" ...	+	" ...	Do.
40	3 years ...	"	14½ " ...	1-2 " ...	Slight ...	+	Few ...	Much improved. Working.
							Nil ...	Lesions disappeared.

Summary of Table I.—Slightly improved 1. Much improved 6. Lesions disappeared 7. Average duration of disease 3.4 years. Average duration of treatment 8.1 months.

FURTHER EXPERIENCE OF SODIUM HYDNOCARPATE (SODIUM GYNOCAR-
DATE A) AND A TRIAL OF SODIUM MORRHUATE IN LEPROSY.

By LIEUT.-COL. SIR LEONARD ROGERS, M.D., F.R.C.P., F.R.C.S., L.M.S.

WITH NOTES OF CASES.

By ASST SURGEN JOGESH CHANDRA MUKERJEE, L.M.S.



Treatment and Progress.—Intravenous injections of 52°C. melting point preparation, begun 28th March, 1918, and continued for six months in doses of from 1 to 5 c.c. Made steady progress. In May he burnt his leg forming a large ulcer, which healed in a month. After the general thickening of his face had greatly decreased, the large nodules on his alæ nasi were successfully removed with horse-hair ligatures. By August he had greatly improved, and ceased treatment, although a few bacilli, mostly broken down, were still found. He was seen in January, 1919, when further improvement had taken place. He has been classed as greatly improved.

CASE 30.

European male, aged 54, with maculo-anæsthetic leprosy of six months' duration. Partially anæsthetic discoloured areas on chest and lower extremities with thickening of popliteal nerve and of forehead and ears. A few lepra bacilli found.

Treatment and Progress.—Intravenous injections of sodium hydnicarpate from 26th July, 1918, to 21st June, 1919, seven months, in from 2 to 5 c.c. doses. Slow improvement without any reaction with diminished thickening, discoloration and anæsthesia. Continuing treatment weekly, but able to work.

CASE 31.

European male, aged 22, with nodulo-anæsthetic leprosy of six months' duration. Small nodules on ears with numerous lepra bacilli. Discoloured partially anæsthetic patch on left leg with thickening of peroneal nerve.

Treatment and Progress.—Intravenous injections of from 2 to 5 c.c. sodium hydnicarpate from 5th July for seven months. Early slight febrile and local reaction with improvement and a second reaction with some fresh nodules in September, which faded again later. Some bacilli still found. Improvement slight; treatment being continued.

CASE 32.

European male, aged 12, with maculo-anæsthetic leprosy of one year's duration. A few nodules on ears with numerous lepra bacilli. Discoloured partially anæsthetic patches on forehead, arms and legs with loss of tactile and thermal sensibility. Ulnar nerve thickened with wasting of hypothenar muscles of left hand and contracture of little and ring fingers.

Treatment and Progress.—Intravenous injections of 52°C., melting point preparation, begun on 25th January, 1918, in doses gradually increased from $\frac{1}{2}$ to 3 c.c. and 10 grains of the drug by the mouth daily except on day of injection. Slight febrile and local reaction after second injection, followed by considerable diminution of the patches and steady improvement. After seven months' treatment, mostly by weekly injections, the ear nodules discoloured patches, anæsthesia and the lepra bacilli had all disappeared and he could straighten his fingers. He remains free from lesions six months later, during which he has continued fortnightly injections.

CASE 33.

European male, aged 28, with extensive maculo-anæsthetic leprosy of six years' duration. Numerous copper-coloured raised patches on face, ears, body and extremities with anæsthesia in the centre of the larger ones. Ulnar nerves thickened and wasting of the left hypothenar muscles and contracture of the little and ring fingers. Numerous lepra bacilli in ear nodules.

Treatment and Progress.—Intravenous injections of 52°C. melting point preparation from 3 up to $4\frac{1}{2}$ c.c. doses, as 5 c.c. produced giddiness, beginning on 13th May, 1918. Slight reaction after second dose followed by improvement. A further reaction occurred in July, again succeeded by considerable improvement,

softening of the nodules, fading of the patches and diminution of the finger contracture, while he felt better. At the end of August no veins were available for injections, so the treatment was continued with sodium morrhuate subcutaneously, under which he continued to improve steadily. Towards the end of January, 1919, a few granular bacilli could still be found in a softened ear nodule, but he had greatly improved.

CASE 34.

Hindu male, aged 21, with tubercular leprosy of eight months' duration. Nodule on ear, large copper-coloured raised patch on left arm, with impairment of tactile and thermal sensation, and smaller patches on legs. Left ulnar nerve thickened and wasting of hypothenar muscles. Lepra bacilli in ear nodules.

Treatment and Progress.—Intravenous injections of sodium hydnicarpate begun on 18th June, 1918, with from 1 to 5 c.c. doses. Febrile and local reaction in middle of July, followed by considerable improvement. At the end of eight months the thickening of the ulnar nerve was much decreased, the discoloured patches and anæsthesia had disappeared, and no lepra bacilli could be found.

CASE 35.

Hindu male, aged 24, with tubercular leprosy for two and a half years. Numerous nodules on face and ears, scattered patches over body and limbs. Both ulnar nerves thickened, and perforating ulcer under left foot. Numerous lepra bacilli found.

Treatment and Progress.—Intravenous injections of sodium hydnicarpate begun on 29th June, 1918, in 2 to 5 c.c. doses. Slight reaction after third injection with improvement. The perforating ulcer was nearly healed in one month and the nodules greatly reduced. He then took twelve grains of sodium gynocardate daily by the mouth. In January, 1919, he had greatly improved, but a few broken-down lepra bacilli could still be found.

CASE 36.

Hindu male, aged 35, with advanced tubercular leprosy of two and a half years' duration, chiefly affecting the face and ears. Numerous lepra bacilli found.

Treatment and Progress.—Begun on 8th February 1918, with intravenous injections of sodium hydnicarpate in doses of from 1 to 5 c.c. He showed no reaction and very little change up to April, when he stopped attending for a month, but returned in May with distinct improvement and softening of the nodules. He continued injections once a week, commenced to work, and in October left for the harvest, when he showed great improvement, although a few bacilli could still be found.

CASE 37.

Hindu male, aged 16, with nodular leprosy of seven years' duration. Extensive copper slightly raised patches on the face, body and lower extremities without anæsthesia. Lepra bacilli found.

Treatment and Progress.—Begun 18th March, 1918, with intravenous injections of sodium hydnicarpate 52°C. melting point in doses gradually increased from 1 to 5 c.c. Slight febrile reactions with temporary increase of the disease occurred, followed by considerable improvement. By the end of June most of the patches had disappeared, his general health had much improved and no acid-fast bacilli could be found. He recommenced work and attended irregularly. He was re-examined in January, 1919, and again no acid-fast bacilli could be found.

CASE 38.

Hindu male, aged 33, with tubercular leprosy of one and a half years' duration. Thickened discoloured patches on eyebrows and cheeks with small nodules on ears, body and limbs, showing numerous lepra bacilli.

Treatment and Progress.—Intravenous injections of sodium hydnocarpate begun on 18th February, 1918, and continued for one year, during the latter part of which mixed solutions of sodium hydnocarpate and sodium morrhuate were given intravenously. By the middle of February, 1919, both the nodules and macules had disappeared, while the remains of a nodule on one ear showed no lepra bacilli, but a few very minute red dots of broken-down bacilli were detected.

CASE 39.

European male, aged 27, with macular leprosy of one year's duration. Almost the whole face covered with thickened coppery red patches, which were also scattered over the body and limbs, but without anaesthesia. Lepra bacilli found in ear nodules.

Treatment and Progress.—Begun 29th January, 1918, with intravenous injections of sodium hydnocarpate 52°C. melting point and given once a week, as he came by rail from a distance, and gradually increased from 2 to 5 c.c., while after August a mixture of that preparation and sodium morrhuate was injected. He has shown steady improvement, and at the end of a year the patches on the face and body had disappeared and his general health was greatly improved; but a few broken-down granular acid-fast bacilli can still be found in the remains of softened ear nodules, so he is continuing treatment.

CASE 40.

Hindu male, aged 16, with nodulo-anaesthetic leprosy of three years' duration. Thickened red patches over cheeks and chin containing lepra bacilli; both ears thickened. Numerous light anaesthetic patches on body and extremities.

Treatment and Progress.—Begun 27th November, 1917, with sodium chaulmoograte in 1 to 2½ c. c. doses, but no improvement resulting by 11th January, 1918, 52°C. melting point hydnocarpate of soda was given instead, and by the end of January the body macular patches had almost disappeared, the face nodules had softened, and his general health improved. He left off injections at the end of March for three months, but took 20 grains of sodium gynocardate daily, and on his return in June his condition had further improved. He continued the pills and was seen early in February, 1919, when the macules and the bacilli had disappeared, and only some anaesthesia in the right thigh remained.

CASE 41.

Hindu male, aged 23, with maculo-anaesthetic leprosy of three years' duration. Raised reddish patches on face containing lepra bacilli and with partial loss of sensation. Portions of left foot anaesthetic.

Treatment and Progress.—Intravenous injections begun on 3rd January, 1918, of sodium hydnocarpate. He improved steadily, and in March had two slight febrile and local reactions followed by greater improvement. From April on he attended irregularly, but took ten to twelve two-grain pills daily, and by September he was almost well, no thickening of the patches remaining, but some anaesthesia left. By the end of November the lesions had all disappeared, and no bacilli could be found.

LATER HISTORIES OF FORMER CASES TREATED WITH SODIUM GYNOCARDATE (HYDNOCARPATE).

In my last paper (1) I tabulated and gave short notes of 26 cases treated for three months and upwards, including 12 which had been under observation for over a year, in 7 of which the lesions had disappeared, including the bacilli in the tubercular ones. I have endeavoured to trace as many as possible of these cases to

ascertain their further progress, and have embodied the information available in Table II. The numbers of the cases are those of Table II of the paper above referred to.(1)

TABLE II.—AFTER RESULTS OF FORMER SERIES OF CASES.

Not traced (all Indian patients) (Nos. 1 to 4, 8 to 10 and 12, 17 and 18) ...	10
Improved further under treatment; (2 died later of influenza) (Nos. 7, 13, 14, 23 and 26) ...	5
Lesions disappeared with further treatment (Nos. 5 and 6) ...	2
Relapsed (in No. 21 lesions again disappeared under treatment) (Nos. 11, 16, 21 and 25) ...	4
No improvement (No. 19) ...	1
Remaining well (Nos. 15, 16, 22 and 24) ...	4
Total ...	26
Remaining well (when last seen but for under one year, Nos. 15 and 21) ...	2
Remaining well for over a year (Nos. 5, 6, 16, 22 and 24) ...	5
Total cases excluding those lost sight of and died of influenza ...	14

Thus out of 14 cases, who were not lost sight of or died of intercurrent diseases, 5 have remained well for over a year, and 2 more for shorter periods; 2 very advanced cases remain greatly improved and 1 slightly improved; 1 showed no improvement and 3 have relapsed. Owing to the advanced state of nearly all the patients, these results may be considered highly encouraging, although leaving ample room for further improvement with continued research, for which more workers are required.

The following are some of the most interesting points in the after-histories of the cases tabulated above. Firstly, with regard to relapses. No. 11 was an early case, whose macular lesions cleared up after six months' treatment. He came recently in reply to a letter and showed some small new macular lesions on his abdomen, which he states only appeared a month before. His face and chest remain clear, although affected when he first came. According to his statements, the relapse took place almost two years after his previous lesions had disappeared, clearly showing the necessity of extreme caution in declaring any case of this disease to be cured; the possibility of fresh infection cannot be absolutely excluded, although unlikely in this case. He is commencing further treatment. Case 25 relapsed after full doses of sodium gynocardate had been given twice instead of once a week at his request, as recorded under the heading of severe and prolonged reactions. Case 21 developed a few slight new lesions containing acid-fast bacilli about the wrists several months after injections had been stopped. He has had sodium morrhuate injections subcutaneously weekly for the last six months, and both the lesions and the bacilli have again

disappeared. Case 20 also returned recently with some fresh lesions after a year's absence. These have been the only relapses met with. The two cases in which the lesions disappeared on further treatment, had received less than six months' injections at the time of my last report, and subsequently did very well with further treatment and remain well. Of the cases showing further improvement, in one severe eye lesions cleared up to such an extent as to give greatly improved vision as tested in the ophthalmic department. One was lost sight of when the lesions had almost disappeared. One very advanced case ceased injections, but continued to improve greatly under gynocardate of soda pills. Of the two who died of influenza, No. 26 was of great interest, as after only slight improvement having been obtained with a year's gynocardate of soda injections, he was put on sodium morrhuate subcutaneously (no veins being available for hydno-carpate injections) and the extreme thickening of the ears steadily diminished and had nearly disappeared at the time he contracted fatal influenzal pneumonia, but for which there was every reason to believe his lesions would have completely disappeared. Case 19, with extremely advanced lesions, has attended fairly regularly, but sodium morrhuate subcutaneously has proved of no avail in his case. The remaining cases who continue well require no comment, except to say that several of them are doing full work again, while they include both anæsthetic and nodular cases.

Taking the whole 40 cases in this and my previous paper treated with intravenous injections of the sodium salts of the unsaturated fatty acids of Taraxogenos and Hydnocarpus oils, of which hydnocarpate of soda appears to be the most active constituent, the results appear to be a distinct advance on any previous method of treating leprosy, while my observations have already been confirmed by Drs. Muir,(4) Carthew(5) and Peacock.(6) Its general applicability is somewhat restricted by the time and skill required for giving the drug by the effective intravenous method, while much patience on the part of the patient is necessary on account of the prolonged time required to obtain the best results. A simpler method of treatment is supplied by the subcutaneous injections of sodium morrhuate dealt with in the second part of this paper.

AFTER-HISTORY OF PROLONGED FEBRILE RE-ACTIONS AFTER SODIUM HYDNOCARPATE INTRAVENOUSLY.

In my paper of October 1917(1) I was able to report that in two years' experience no ill results had followed the slight febrile and local reactions sometimes produced by this treatment. Shortly afterwards case 25 of that paper, when apparently

recovered, asked me to give the full doses twice instead of once a week as his leave was nearly finished. As a result of this attempt to push the treatment, he developed prolonged fever with numerous fresh patches containing lepra bacilli and became much debilitated and for a time bed-ridden, as in two cases described shortly afterwards by Dr. Spittell of Colombo.(7) After several months he improved greatly, returned to his country and was reported by the Civil Surgeon of his district as fit to resume his duties. At his request I sent him some sodium morrhuate for subcutaneous injection, but he again developed high fever, great weakness and some new lesions, showing he was still hypersensitive to the treatment. I then sent him some sodium morrhuate pills to take orally and he has recently reported that he had been free from fever for a month and the new lesions had largely subsided. He is still anxious to continue the treatment.

Another very remarkable case was one of twenty years' duration with typical leonine appearance and extensive ulceration of the ears and fingers. After distinct improvement had resulted from subcutaneous injections of sodium gynocardate, I gave a very small dose intravenously. He developed fever the next day lasting for some weeks, when I found leucocytosis and signs of amœbic hepatitis with a history of former dysentery, which improved on emetine. I did not see him again for over a year, during which he was not injected. Steady improvement had by then taken place, the thickening of the face had disappeared—only soft folds of skin remaining, the ears were quite healthy except for thinning of the outer edge due to previous loss of tissue and the fingers had also healed. In short; he presented the most striking improvement I have ever seen in such a chronic and advanced case.

The third and last case in which I have seen a prolonged and debilitating reaction, showed extensive very thickened red patches on his nose and back nearly half an inch in depth. I commenced with intravenous injections twice a week of a mixture of sodium hydnocarpate and sodium morrhuate. A slight local reaction soon occurred and on reaching a dose of 2 c.c. of the former and $\frac{1}{2}$ c.c. of the latter preparation he had a severe, prolonged and debilitating reaction confining him to his house, but not to bed, lasting in decreasing degree for two months. During the next two months he steadily regained his strength and is now able to get about again. As soon as the local reaction had subsided, it was evident that the thickened tissues were much softer and from that time they steadily shrank, until at the end of that time, without any further injections, nothing was left except discoloured marks on the back and soft thickening of one side of the nose; the improvement having been

more rapid and extensive than I had previously seen in such a case within the time. After the fever had ceased, he took sodium morrhuate in pills, gradually increased from one to ten grains, daily. He is much pleased with the result, which he thinks well worth the suffering he went through. In view of this case I also regard the extraordinary improvement in case 2 of over twenty years' duration as resulting from his prolonged and temporarily debilitating reaction.

I have already recorded and illustrated (1) that, during even mild reactions, innumerable lepra bacilli in the thickened tissues are broken up. Numerous further microscopical examinations have shown that the softening and shrinking of the tubercular lesions of leprosy under the influence of sodium hydnocarpate intravenously is regularly accompanied by breaking up of the lepra bacilli until either only minute red dots remain, or their total disappearance results. This may occur without any febrile or definite local reactions being observed, but more rapidly when mild reactions take place, which therefore appear to be advantageous. The fever is nearly certainly due to the liberation of toxins on breaking up of the organisms, which may be so great in the very occasional severe and prolonged reactions as to temporarily break down the resisting powers of the patient, and even lead to some spread of the disease for a time. I have only seen such injuriously severe reactions in cases with greatly thickened tissues with consequent enormous numbers of lepra bacilli, so it is in this class of cases that especial caution is necessary in increasing the doses. It is well to wait at least two weeks after the slightest reaction before giving another dose, which should be smaller than that which provoked the reaction. Although small doses may at first be given twice a week, when over 2 c.c. is reached, I never inject oftener than once in five to seven days. In nerve cases, with comparatively little thickening of the tissues, reactions are rare and slight, but may appear in the form of hyperæsthesia often followed by some return of sensation. These reactions with destruction of the lepra bacilli are indeed the most hopeful sign of the new treatment; but it must not be forgotten that a drug which is powerful enough to break up the highly resisting acid-fast bacilli in the human tissues is clearly one to be used with all due circumspection.

There remains to be considered the all-important question as to what hope this method holds out of being able to effect actual cures in the scientific sense of complete elimination of the lepra bacilli from the system. In view of the relapses now reported of cases several months after disappearance of the visible lesions of the disease, taken with our knowledge of the occasional long incubation period of leprosy, indicating

survival of the bacilli for long periods in a latent condition, make it clear that we are still very far from having reached anything like a definite cure. We also have the fact that the closely related acid-fast tubercle bacillus may certainly remain latent in the human system for many years, and yet ultimately produce fresh active lesions. The results already obtained are, however, sufficiently encouraging to stimulate further work on similar lines, in the hope that it may ultimately lead to an important permanent advance in the control of this terrible disease.

PART II. SODIUM MORRHUATE IN LEPROSY.

Sodium morrhuate* is prepared from codliver oil in a similar manner to that by which sodium hydnocarpate is obtained from chaulmoogra oil, as already described in a paper on its use in tuberculosis, which is about to appear in the *Indian Journal of Medical Research*. This new preparation was found to have the great advantage over sodium hydnocarpate of producing very little pain or induration on subcutaneous injection, and thus being readily absorbed and much more active as shown by the slight febrile and local reactions often following it, when administered by this simple and rapid method, than the chaulmoogra oil preparations. I have therefore been trying it, chiefly by subcutaneous injection, in leprosy cases during the last year, and have found it to be distinctly more effective by the simple subcutaneous method than hydnocarpate of soda, although the latter holds its own well by the intravenous route. The coloured plate shows what can be accomplished by subcutaneous injections of sodium morrhuate in leprosy, while cases 1 to 14 are a consecutive series thus treated, mostly for the comparatively short period of six months or less, so that it is not yet possible to say what will be the ultimate results. Sodium morrhuate can also be injected intravenously, and has the advantage that it is far less irritating to the veins than sodium hydnocarpate, and can be used in this way without the addition of sodium citrate and with much less tendency to the vessels becoming blocked and useless for this purpose. I have not yet had sufficient experience to decide if the intravenous route is more effective than the simpler subcutaneous and intramuscular methods.

Reactions after sodium morrhuate.—The most striking feature of sodium morrhuate subcutaneously is the occurrence of slight febrile and local reactions in the majority of the cases, shortly followed by improvement; as with hydnocarpate of soda I have only seen them

*Sodium morrhuate can be supplied by Messrs. Smith, Stanistreet and Co. in powder form or in solution in sterile ampoules with directions for use in leprosy and tuberculosis

after intravenous, and never after subcutaneous, injections, owing apparently to slowness of absorption. In all but one of the sodium morrhuate cases the reactions were very mild, while in the remaining one (No. 9) great improvement resulted within a month of a more prolonged reaction. Longer experience will be necessary before it can be said that injuriously severe reactions do not occur after subcutaneous or intravenous use of the new drug. A noteworthy feature of the cases was the very frequent improvement in the general health. Another interesting point is that a patient with extremely thickened ears, who had shown comparatively little improvement after over a year's treatment with sodium gynocardate, nearly completely cleared up under sodium morrhuate subcutaneously, but then unfortunately died of influenza pneumonia. I have also given mixtures of sodium hydriocarpate and sodium morrhuate intravenously in several private cases with very satisfactory results. The two drugs may therefore be given either alternately or combined

when improvement with either alone is slow or in abeyance.

It is also of great interest to note that the reactions accompanied by breaking up and eventual disappearance of the bacilli and good progress in leprosy under sodium morrhuate show that there is nothing absolutely specific against leprosy in chaulmoogra oil products, so other unsaturated fatty acids may also be expected to yield effective preparations against the acid-fast bacilli of both leprosy and tuberculosis. Nor is such action, as far as we yet know, limited to the resistant acid-fast bacilli, and thus a vast field of research is opened up, which may in time yield great advances in bacterial diseases, which constitute such an important part of medical science.

REFERENCES.

- (1) *Ind. Jour. Med. Research*, Vol. V, No. 2, Oct. 1917.
- (2) *Year Book of Pharmacy*, 1879, 523-33.
- (3) *Phil. Jour. Med. Sci.*, Vol. XI, No. 2, Sec. A, 1916, 75.
- (4) *Ind. Med. Gaz.*, May 1918.
- (5) *Ibid.*, Nov. 1918, 407.
- (6) *Ibid.*, March 1918, 95.
- (7) *Ibid.*, Jan. 1918, 33.

TABLE III.

Leprosy cases treated with sodium morrhuate subcutaneously.

Number of case.	Duration of disease.	Type of disease.	Duration of treatment.	Doses of 3 per cent. solution.	Febrile reactions.	LEPROS. BACILLI.		PROGRESS.
						Before treatment.	After treatment.	
1	6 years ...	Anæsthetic ...	4 months ...	1-14 c.c. ...	Nil ...	—	...	Lesions disappeared.
2	6 " ...	Tubercular ...	4 " ...	1-14 " ...	Slight ...	+	Few ...	Slight improvement.
3	1 year ...	Anæsthetic ...	4 " ...	1-14 " ...	Nil ...	—	...	Much improved.
4	6 months ...	" ...	5 " ...	1-14 " ...	Slight ...	—	...	Lesions disappeared.
5	1 year ...	Tubercular ...	5 " ...	1-14 " ...	Nil ...	+	?	Much improved.
6	7 months ...	Anæsthetic ...	5 " ...	1-2 " ...	Slight ...	—	...	Slight improvement.
7	10 years ...	Mixed ...	6 " ...	1-14 " ...	Slight ...	+	Few ...	Much improved.
8	3 months ...	Anæsthetic ...	6 " ...	1-14 " ...	Nil ...	—	...	Do.
9	6 years ...	Tubercular ...	6 " ...	1-14 " ...	Severe ...	+	Nil ...	Do.
10	2 " ...	Mixed ...	6 " ...	1-2 " ...	Slight ...	+	Few ...	Do.
11	6 " ...	Tubercular ...	6 " ...	1-2 " ...	Nil ...	+	Nil ...	Lesions disappeared.
12	14 " ...	" ...	9 " ...	1-2 " ...	Slight ...	+	Few ...	Much improved.
13	2 " ...	" ...	11 " ...	1-1 " ...	Slight ...	+	Few ...	Do.
14	3 " ...	Mixed ...	12 " ...	1-14 " ...	Slight ...	+	Nil ...	Do.

Summary of Table III.—Slightly improved 2. Much improved 9. Lesions disappeared 3. Average duration of the disease 4.1 years. Average duration of treatment 6.3 months.

FURTHER INVESTIGATIONS ON THE CHEMICAL NATURE OF MARGOSIC ACIDS (FATTY ACIDS OF THE NIM OR MARGOSA OIL). RECENT CONCLUSIONS DRAWN FROM EXPERIMENTAL AND CLINICAL USE OF MARGOSATES AND ETHYL ESTER MARGOSIC.

By K. K. CHATTERJEE, F.R.C.S.I.,

Surgeon, Campbell Hospital, and Teacher of Surgery,
Campbell Medical School.

CHEMICAL NATURE OF MARGOSIC ACIDS.

COMPOSITION of nim or margosa oil. In my first paper on this subject, which I read before this Society in November 1917, reference was made to the work of Dymock, Warden and Hooper. They claim to have obtained from

the oil, a neutral resin containing sulphur, a substance having alkaloidal nature and glycerides of fatty acids such as stearic, butyric and valeric acids. They made no attempt to separate the fatty acids. Lewkowitsch also examined the oil and the mixture of the fatty acids without attempting to separate them. In my paper, above referred to, there was some discussion in this direction but no definite conclusion was at that time arrived at. At my request Mr. R. N. Sen, M.A., M.Sc., F.C.S., Professor of Chemistry, Civil Engineering College, Sibpur, kindly undertook to investigate with a view to separate the mixed insoluble fatty acids and to elucidate the nature of so-called margosic acids (the mixture of insoluble fatty acids of

margosa oil). He isolated the unsaturated fatty acids from the mixed insoluble fatty acids by Tortelli and Ruggeri process. The neutralisation value of the unsaturated fatty acids was 185.89 and the iodine value was 105.28. It was liquid at ordinary temperature, slightly yellowish in colour, had a somewhat pungent smell and soluble in ether, alcohol and benzene. The solid acid separated had the neutralisation value 198.12 and iodine value 12 which shows that unsaturated fatty acids were still present in a very small quantity. This acid was found to be stearic acid with a minute trace of unsaturated acids. The unsaturated liquid acid appeared to consist of oleic acid ($C_{18}H_{34}O_2$) and an acid belonging to the linolic acid series. This latter acid is evidently the characteristic acid of margosa oil and may therefore be termed margosic acid. $C_{22}H_{40}O_2$ has been suggested for its formula. This acid has not been obtained from any other oil and was not known before. It is liquid at ordinary temperatures, is yellowish in colour and possesses no optical activity. Its sodium and potassium salts are soluble in water, its lead and barium salts are soluble in ether and in benzene. It forms about 23 per cent. of the total fatty acids present in *nim* oil. Professor Sen has also at my suggestion prepared ethyl ester from the mixed fatty acids. He has also prepared zinc, calcium lead, bismuth mercury and arsenic salts of these acids.

ETHYL ESTER MARGOSIC AND MARGOSATES.

In my two previous papers *Indian Journal of Medical Research* and *Indian Medical Gazette*, I attempted to describe the properties of sodium and potassium margosates. The antisymphilitic properties of margosates are due, I presume, to their being soaps of a special kind inasmuch as they contain a fatty acid of a peculiar chemical formula. Soaps act chiefly by a process of hydrolysis induced either by its coming in contact with water or by the enzymic activity of the fluids and tissues of the body.

Reasoner has recently said that the organism of syphilis will not live even in dilute solutions of soap.

In this paper I shall deal with the action of ethyl ester of margosic acids and I shall try to point out the advantages it possesses. Ethyl ester margosic is a clear reddish brown liquid having a fruity (aromatic) odour with a high boiling point. It is insoluble in water but soluble in alcohol, ether and chloroform. The chemical constitution of ethyl ester margosic has two characteristic features:—(1) Being in loose chemical combination it is more readily hydrolysed than potassium margosate. (2) Its margosic content is higher than that of potassium margosate. We can, therefore, reasonably expect that for a much smaller dose ester should have the

same or greater physiological action and therapeutic properties. This has been confirmed by experiment on animals as also by its clinical use. One c.c. of this ester injected intravenously or intramuscularly gave rise to no untoward symptoms. While ascertaining its lethal dose I found that 1 c.c. of it injected intravenously killed a rabbit weighing 250 gm. Post-mortem findings showed that death was due to asphyxia.

A CONCEPTION AS REGARDS THE MODE OF ACTION OF ETHYL ESTER MARGOSIC AND HYDRARGYRI MARGOSATIS IN SYPHILIS.

I have already stated that ethyl ester acts by a process of hydrolysis. It is not unlikely that concurrently with this process the lipoid-globulin or the protective substance of the serum is broken up and the organism of syphilis is set free. Now, it is possible that as their hydrolytic process continues it also induces a hydrolysis of the organism. Clinical phenomena produced after ester treatment seem to prove that this process renders the organisms inert though in some cases this is not continued long enough to cause their destruction. This led me to think of some substance which should be introduced in such a way that it may be fixed to the hydroxyl groups of the organism by a process of adsorption. There is a consensus of opinion among syphilologists (Noguchi, Andrew, Balfour, Ross, Neisser, Keogh and even Ehrlich) that mercury in some form must be introduced into the system in order to disintegrate and destroy the organism. If hydrargyri margosatis is combined with the ester the desired effect is obtained. The metallic mercury is liberated and becomes fixed to the hydroxyl groups of the organism and so alters the arrangements of its ions that the protoplasm is disintegrated and the parasite is killed. The greater the ease with which the metallic mercury is liberated the freer they are and the more readily they fix themselves to the free hydroxyl groups. This latter action is facilitated by the presence of ester.

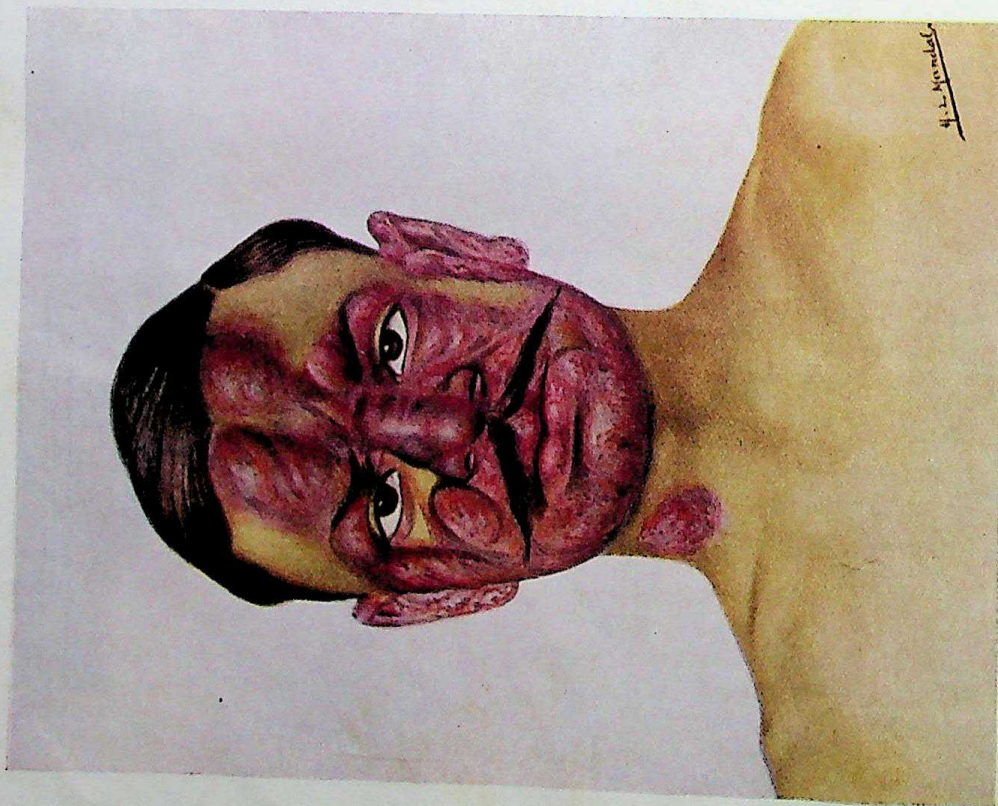
THE MINIMUM HÆMOLYTIC DOSE OF SODIUM AND POTASSIUM MARGOSATES.

At my request and at the instance of Col. W. D. Sutherland, M.D., I.M.S., Rai Dr. G. C. Mitra Bahadur, Asst. Serologist, has been good enough to carry out extensive experiments in order to determine the minimum hæmolytic dose of sodium and potassium margosates. Their results compare favourably with my observations published in the *Indian Medical Gazette*, Vol. LIII, No. 10, Oct., 1918. In order to confirm the results published in that paper with reference to the different behaviour of potassium margosate with the blood from syphilitic and non-syphilitic patients, I have since carried out a number of experiments and

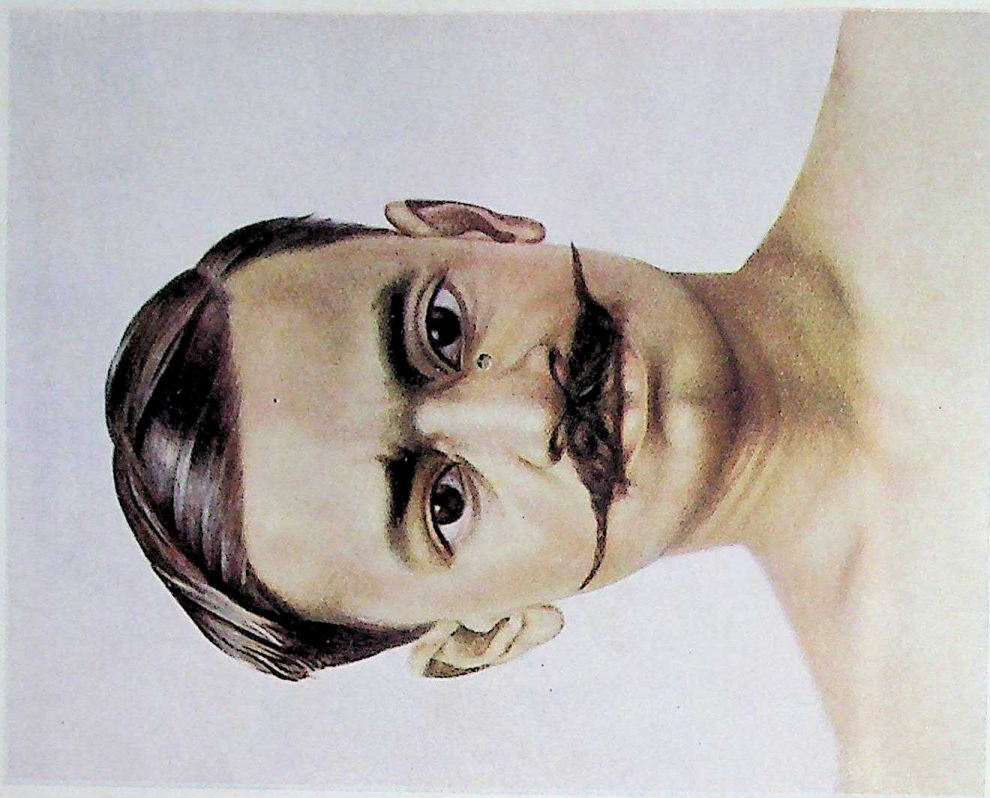
PLATE I.

CASE No. 1. C. LAWRENCE, A.I., M., 24. Mixed type of Leprosy.

By K K. CHATTERJEE.



After third injection.



Six months after treatment was discontinued.

the results have been uniformly convincing. I am indebted to my House Surgeon, Dr. N. C. Chatterji, M.B., for his invaluable assistance in carrying out these experiments.

CLINICAL CONCLUSIONS BASED ON CASES OF SYPHILIS, LEPROSY, SKIN DISEASE, FILARIASIS, SEPTIC INFECTIONS AND ULCERS TREATED WITH ETHYL ESTER MARGOSIC AND HYDRARGYRI MARGOSATIS.

Cases of Syphilis.—Notes of 27 cases which are still under observation. These belonged to Primary stage 5, Secondary 8, Tertiary 13, and Congenital type 1. They had the following treatment:—

Group I.	Group II.	Group III.
Potass. margosate.	Ethyl ester margosic.	Ethyl ester margosic-hydrargyri margosatis.
2 cases.	6 cases.	19 cases.

The lesions disappeared most quickly in the third group of cases. Two illustrative cases are exhibited.

Case No. 1.—Serpiginous ecthyma with positive W. R. The lesions were extensive and commenced to clear up after the third intravenous injection of hydrargyri margosatis and ester.

Case No. 2.—Of congenital syphilitic lesion, with necrosis of the frontal bone and destruction of the right eye. He had three i.v. injections of hg. marg. and ester with remarkable improvement.

Cases of Leprosy.—Tubercular, maculo-anæsthetic and mixed types have been treated. With three cases the treatment has been suspended. Eight cases are still under treatment. In the first three cases treatment was commenced with potass. margosate. One of these left off treatment after making satisfactory progress as he had to go to his native home urgently. The other two cases made steady progress with potass. margosate but progress was more marked and rapid after ester treatment was commenced.

Case No. 1.—C. Lawrence, A. I., male, 24. Mixed type. Introduced by Dr. H. Chatterji, L.R.C.P. & S., I.M.S. (retd.), Honorary Physician, Mayo Hospital, in the third week of May, 1918. Five years ago he noticed nodules in the face and trunk. Had Kaviraji treatment, and was in the Medical College, where the nodules were examined and his case was pronounced to be one of leprosy. He had 24 injections of sodium gynocardate (given by Dr. Ekendra Nath Ghose, M.D., M.Sc.) eight months ago. The nodules subsided but relapsed after two months. Examined on 20th January, 1918:—His face and trunk has numerous patches of nodules which were partly anæsthetic. (The diagram was taken after the third injection, when the nodules were showing signs of marked inflammatory reaction.) Had the conditions

18 injections of pot. marg. sol.; local reaction and the skin over the patches commenced to peel off after the third. Ester injections were commenced on 12th August, 1918, and with this he began to improve rapidly. After fourth injection, on 29th September, 1918, the skin was smooth and the colour was normal. Sensation also returned. Treatment was suspended and he has been under observation since without treatment (for six months). There are no signs of relapse. Plate No. I.

Case No. 2.—J. N. Bhattacharji, Hindu, male, age 30. Nodulo-anæsthetic form of leprosy over the right scapular region and posterior part of the arm, one large patch in left lumbar region. During 12 years patches were gradually spreading, and becoming anæsthetic. Microscopic examination on 30th May, 1918, showed numerous lepra cells containing the bacilli. This patient was introduced to me by Dr. R. Chakravarti. Treatment commenced on 31st May, 1918, but the patient attended irregularly and on one occasion absented himself for six weeks. He has 35 injections of potass. marg. and improved with this treatment. The treatment was interrupted and then he had 27 injections of ethyl ester margosic. Treatment was suspended on 28th January, 1919, as the skin had become normal and sensation had returned. There are no signs of recurrence after six weeks after suspension of treatment.

Cases of skin disease.—Various kinds of skin disease have improved rapidly and some were cured permanently, possibly because of the fact that (as I have proved before) a greater part of the drug is eliminated through the skin. The following cases of skin disease (parasitic or non-parasitic) have been treated.

1. Eczema of the following types: (a) papular, (b) erythematous, (c) papular and impetiginised.
2. Erythema iris.
3. Scleroderma (localised).
4. Tinea affections (trichophyton megalosporon).
5. Pedicular affection of the scalp and trunk (pediculis capites vel corporis).
6. Scabies (sarcopites hominis) with mixed pyogenic infection).
7. Erythrasma (microsporon minutissimum).
8. Dermatitis. Exfoliative and ulcerative varieties.
9. Diffuse psoriasis (staphylococcal).

Most of the above cases were diagnosed by pathological examinations. In one case (wife of Major G.) (pediculosis) in which the ova were detected caused erythematous and papular eczema. After treatment for three weeks Major W., I.M.S., reported patient was much better though some irritation was left. In a case of erythrasma, Mr. H., of 17 years' duration, local treatment cured the conditions.

Case No. 1.—Exfoliative and ulcerative dermatitis, B. D., Hindu, female, age 30. Admission into Campbell Hospital, 30th February, 1918. Discharged, 30th September, 1918. Psoriasis all over the body with fissures and cracks which were ulcerated; duration about two weeks. W. R. absolutely negative. Had 10 ester injections, which completely cured her. She was under observation three weeks after cure.

Case No. 2.—Exfoliative dermatitis, B., Hindu, male, age 35. Admission into Campbell Hospital, 15th September, 1918. Discharged, 12th February, 1919. Diffuse psoriasis with exfoliation and fissures all over the body, scalp and face: duration 5 years. W. R. absolutely negative. He was completely cured after 27 injections of ester. Was under observation for one month after cure. The remaining cases improved rapidly under the treatment and there was no recurrence up to date. (Plate No. II.)

Cases of filariasis (lymphatic oedema, lymphangitis, etc.) were treated with ester and local applications of an ointment of margosates. The inflammatory signs and symptoms and the oedema subsided.

The following types of septic infection were treated:—Abscess (strepto. and staphlo.) 8 cases; cellulitis (strepto.) 5 cases; carbuncle (staphlo.) 1 case; erysipelas (strepto.) 1 case; mastoid abscess 2; septic arthritis 2; chronic sinuses 4; ulcers, leg, 4. All these cases were cured except a case of extensive facial cellulitis.

RADICAL CURE OF HYDROCELE BY PPLICATION.*

By K. K. CHATTERJEE, F.R.C.S.I.,

Surgeon, Campbell Hospital, Teacher of Surgery, Campbell Medical School, Calcutta.

BEFORE a meeting of this society in December 1911, I described an operation for the radical cure of hydrocele of moderate size by lymphangioplasty or internal drainage. I claimed several advantages for this operation, two among these having strongly appealed to me. First, it did not disturb the normal anatomical relations between the tunica vaginalis and the testicle. Secondly, the cure brought about by this method follows nature's process of bringing about spontaneous cure of hydrocele. I have from time to time presented before this society cases in which recurrence had not taken place for a long time after operation. Lymphangioplasty, however, is not a suitable operation for large hydroceles, and I have devised an operation by plication in which, besides those mentioned above, other advantages are obtained. The advantages are enumerated below:—

1. After eversion or excision operation the testicle lies exposed in the scrotum and therefore

the testicular sensation is acute; whereas, after the plication operation the testicle has a double covering formed by the sac in front and therefore the testicular sensation is even less than in the normal condition.

2. After eversion operation the bulk of the testicle and its sac is great, the antero-posterior diameter being much increased. This is not so after plication operations.

3. In plication operation the normal anatomical disposition of the sac and the testicle is not disturbed. As a matter of fact this operation is a close imitation of the process by which nature brings about a spontaneous cure of hydrocele.

The operation shortly described: Skin incision vertical (or circular or elliptical where excision of part of the scrotum is indicated), exposing the whole of the sac. Incision of the sac for almost its whole extent along a line which would leave the two halves of the sac fairly equal. The inner surface of the sac and the visceral layer of the tunica on the testicle is roughened with a piece of gauze or lightly scraped with a scraper or a metallic comb. This is done just short of causing an oozing from the surface. Now, one edge of the sac is stitched to the line of reflection of the tunica on the posterior aspect of the testicle. The other margin of the sac is reflected (or transplanted) over the former portion and stitched taut on the anterior aspect of the testicle which is already covered by the other half of the sac. In large hydroceles a redundant portion of the sac above or below the testicle is folded over itself, tucked in and secured with sutures. Thus the testicle has a double covering of the tunica vaginalis, there being practically no space between the testicle and first half of the sac or between this and the latter half of the sac. Sterile catgut or silk is used for suturing. The skin wound is closed in the usual way by silk-worm gut or metallic clips.

Remarks: I have kept a record of 81 consecutive cases of hydrocele done by plication method. In many of these with double hydroceles I have treated one by plication and the other by eversion to compare the differences in the size and testicular sensation. Though the description of the operation may seem complicated, the actual operation is very simple. Twelve minutes is the average time it has taken and 10 days the average convalescence. Many of these were done under local anæsthesia. In these 81 cases there has not been a single recurrence.

A MODIFIED "BASSINI" OPERATION FOR HERNIA.

By K. K. CHATTERJEE.

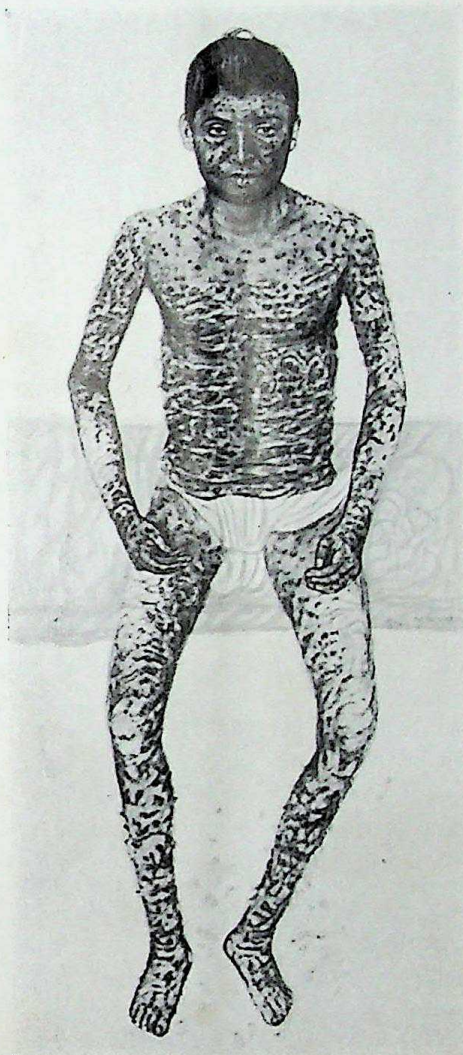
In many cases after herniotomy (radical cure of hernia) there is a bulging in the inguinal region which disconcerts the patient a good deal. This to my mind is due to the fact that the fibres of the external oblique are found

* A paper read before the Medical Section of the Asiatic Society of Bengal.

PLATE II.

CASE No. 2. B., H.M., 35. Enfoliative Dermatitis.

(By K. K. CHATTERJI.)



Before treatment.



After treatment.

somewhat separated on exposing it and in some instances they get further separated in the process of stitching it up. To obviate this defect I have lately devised a method of transplanting or overlapping the tendon. First, the outer part of the divided tendon is brought over and fixed to the deeper surface of the inner part by a few stitches (in the same way as the conjoined tendon of the internal oblique and transversalis has been fixed to the deeper surface of Poupart's ligament). Then the inner part is similarly brought over and fixed to the superficial aspect of the outer part of the tendon by stitches. The inguinal region has therefore a double covering of the tendon of the external oblique, the two parts on either side of its line of division completely overlapping each other. The operation is no more complicated than Bassini's. I have 18 consecutive cases on record and the result has been more satisfactory than after simple Bassini. I have performed many of these under local anæsthesia.

TREATMENT OF LIVER ABSCESS CASES BY ASPIRATION AND IRRIGATION.

BY K. K. CHATTERJI.

In a paper read before a meeting of this society and published in the *Indian Medical Gazette*, Vol. XLIX, No. 3, March, 1914, entitled Emetine in Hepatitis and Amœbic abscesses of the Liver and Spleen, I advocated aspiration as the best method of treatment for liver abscess on four rational grounds. I have since then followed this method and I can definitely state that I have met with better success than I had before. It has, however, sometimes happened that liver abscesses have had to be aspirated more than once. In order to obviate this I have lately followed the method of aspiration and irrigation. The abscess is aspirated in the usual way and when no more pus would escape, I inject through the cannula a measured quantity of saline or iodine solution. This breaks up the debris that may still be in the cavity and is brought away when the aspirator is worked again. This process is repeated till nothing but pure liquid escapes. I have found that even the application of a very powerful direct pump would not in many cases draw out some of the larger debris unless a dangerously large cannula is used. Of 18 consecutive cases of liver abscess which I have now on record 13 were treated by aspiration and irrigation and of these in only two, had aspiration to be repeated. These were large abscesses. In one case the abscess was too superficial and an ambitious attempt to cure it by aspiration failed and it had to be opened. Three were anterior abscesses which were subcutaneous and had to be opened. These were treated by Bier's cupping method after opening. One was a lateral abscess bulging in the right lumbar region. This was opened and found to be a pericolic abscess. One was a case of non-

suppurative stage of hepatitis and was only explored. In all these cases emetine was injected and it was followed by oral administration of ipecac.

ON THE RADICAL CURE OF INGUINAL HERNIA: A PLEA FOR GREATER SIMPLICITY.

BY ERNEST F. NEVE, M.D., F.R.C.S.E., ETC.,

Surgeon, Kashmir Mission Hospital.

The essential principles governing the radical cure of hernia are:

1. The operation must be safe. There must be no risk to life.
2. The operation must be adequate.
3. It must be simple.

1. *Safety.* I shall never forget a post-mortem which I had to perform in a British Hospital, on a case operated upon by one of the staff. The wound was septic and as the ligature had slipped off the neck of the sac, there was a direct communication with the peritoneal cavity, and acute peritonitis. Such accidents should be impossible. Safety can be ensured by scrupulous antiseptic precautions. As a second line of defence I am in the habit of not only ligaturing the neck of the sac but also suturing the edges. Care too is of course required to avoid operating on cases which are physically unfit.

2. *Efficiency.* This depends more upon the operator than on the exact method employed. I suppose the favourite operations are the John Hopkins', Bassini's, Macewen's and Kocher's or modifications of these.

Two absolute essentials of operation are (a) to secure the sac neck high up and withdraw it from the internal abdominal ring, and (b) to adequately close the dilated inguinal canal.

3. *Simplicity.* If the above objects are attained the simpler the operation the better. There has been too great a tendency to over-elaboration. Operations, theoretically perfect, have been devised. But their performance has entailed lengthy procedure and often unnecessary traumatism. Although in many cases these methods have been absolutely adequate, it is certain that excellent results can be obtained in a much simpler manner. I think too that it is true as Colonel Alfred J. Hull says "that much of the trouble following the operation for the radical cure of hernia, and many of the recurrences are due to the well intentioned but ill advised efforts of the surgeon to effect repair."

Nothing can be simpler than the operation which Colonel Hull describes (*B. M. J.*, Vol. 2, 1917, p. 548). An incision of one inch in the skin and half an inch in the external oblique aponeurosis, the sac is opened and the posterior aspect corresponding to the internal margin of the internal

ring is seized by forceps in one or two places. The tube of peritoneum leading into the abdomen is now isolated and ligatured as high as possible. The skin is sutured with silk-worm gut passing down to and taking up the edge of the external oblique. In about ten per cent. of his cases, Colonel Hull draws the conjoined tendon over the cord and sutures to Poupart's ligaments without however enlarging the wound.

So far as simplicity is concerned this operation is ideal. It does not however in the majority of his cases appear to me to comply sufficiently with the second essential of an operation, *viz.*, adequate closure of the canal. Incidentally to, it may be remarked that most surgeons would find it difficult to work through quite such small incisions.

During the past ten years two hundred and thirty-seven operations for the radical cure of inguinal hernia have been performed in the Kashmir Mission Hospital. There was no mortality.

The operation which I perform and recommend is as follows:—

A two-and-a-half-inch incision. Open the neck of the sac as high as possible. If the sac is small or easily removable, it is shelled out, the neck ligatured high, the sac removed, the edges sutured with catgut, and the stump drawn above the internal abdominal ring by passing the two ends of the suture through the abdominal wall from within out by means of a Macewen's hernia needle, at points half an inch apart and tying. The canal is then closed by Macewen's method, bringing the edge of the internal oblique and conjoined tendon behind Poupart's ligament with stout silk, which is not finally tied until the external abdominal ring has been closed with mattress sutures.

Where the hernia is congenital or the coverings of the sac adherent, the neck of the sac is dealt with in the same manner as that suggested by Colonel Hull. This has the great advantage of avoiding all traumatism to the veins and lymphatics of cord and sac coverings.

The method described above takes ten minutes or quarter of an hour to complete. In some cases the thinness of the peritoneum causes some delay. Colonel Hull's method, which is similar to that practised by Prof. Taylor of Dublin and others, carries special weight because he has dealt with as many as five hundred cases a year. He must also have acquired special dexterity in its performance. Perhaps his average case is of an earlier and less complicated type than the chronic large hernias which are so common in India. And has sufficient time elapsed to show that the omission to close the inguinal canal does not increase the number of recurrences? His contribution to the subject is an important one as indicating how simple the operation may be made. The inclusion in all cases of Macewen's

method of repair of the inguinal canal would, however, hardly impair the simplicity and yet would, I feel sure, give greater security.

A Mirror of Hospital Practice.

SURGICAL NOTES.

BY S. H. PUGH, M.B., CH.B.,

South Travancore Medical Mission. (L.M.S.)

Gastro-Enterostomy.—During the last two years a series of seventy-five posterior gastro-enterostomies have been performed. Each year one becomes more astonished at the extraordinary number of patients there are in Travancore suffering from gross lesions of the stomach and duodenum in the region of the pylorus, with the resultant obstruction to the passage of food. Six or seven years ago such cases were hardly noticed in this hospital, and now they are coming in constantly increasing numbers, as those who go away cured send others. Our experience is very similar to that of Dr. C. C. Elliott, Paoning, China, who writes in the *China Medical Journal* of September 1918:—"I make no apology for returning to the subject (Duodenal and Gastric Ulcers). We are now more and more surprised at the frequency with which these ulcers occur. During the two and a half years in question, while sifting out the forty cases referred to, we have probably seen forty others which for one reason or another did not come to operation. Whether northern Szechwan is unique in this respect I have not yet been able to ascertain. The chances are, however, that wherever it becomes bruited abroad that chronic 'stomach-ache' can be relieved by operation with slight suffering, slight danger, and slight expense,—these cases will soon begin to appear. Thus, of our forty cases, two came in the latter half of 1915, ten in 1916, and twenty-eight in 1917."

From these experiences one wonders whether ulcer of the stomach with stenosis of its outlet may not be more common than has been thought, especially in parts of India where there are large numbers of ill-nourished people weakened by ankylostomiasis and other diseases. (In eleven of the last forty-three cases hook-worms were found on opening the jejunum.) So far most of these patients have come from among the poorer classes, and it may be that their food is an important cause of the condition. Of the forty-three cases operated on during last year, twenty-nine gained in weight during the three or four weeks they remained in the hospital after operation. Those who had not gained in weight in such a short time on leaving the hospital, were completely relieved of their symptoms, and were almost certain to gain in weight later.

Each of the thirteen patients without exception, who returned to us during this year to show

themselves, gained in weight as follows. They had greatly improved in appearance.

Weight before operation.	Weight gained.	In months after operation.
Stone. lb.	lb.	
7 1 $\frac{1}{2}$	11 $\frac{1}{2}$	6
7 2 $\frac{1}{2}$	17	13
6 5 $\frac{1}{2}$	27 $\frac{1}{2}$	5
7 4 $\frac{1}{2}$	7 $\frac{1}{2}$	18
5 11 $\frac{1}{2}$	19 $\frac{1}{2}$	10
6 7	9 $\frac{1}{2}$	8
7 3 $\frac{1}{2}$	22 $\frac{1}{2}$	10
6 11	19	8
5 7 $\frac{1}{2}$	11 $\frac{1}{2}$	8
5 5	23 $\frac{1}{2}$	6
4 13	25 $\frac{1}{2}$	4
7 5	12 $\frac{1}{2}$	11
6 10	13 $\frac{1}{2}$	3

The patient who gained 25 $\frac{1}{2}$ lb. in four months, and who only weighed 4 stone 13 lb. at the time of the operation, was a man aged 28.

The inflammatory and cicatricial masses are often large, not infrequently feeling as large as a lime and sometimes much greater. In one case the pyloric end of the stomach, in which active ulceration was obviously still present, was very firmly adherent to the liver and to a wide area of the abdominal wall. The adhesion to the wall could only be freed with great difficulty. Even after this was done, only a small portion of the cardiac end of the stomach remained sufficiently free to be delivered through the wound for the posterior gastro-enterostomy, which was performed with difficulty much nearer the fundus than usual. The patient made a good recovery. His pain, which before the operation was extremely severe, gradually disappeared in spite of the remaining adhesions to the liver, etc. Apparently therefore the ulcer or ulcers began to heal after the operation. Unfortunately he ran away before being weighed. He was eating well.

Five of the seventy-five cases died after operation. One case had a very small cirrhotic liver. As there was a cicatricial mass at the pylorus, and as the patient was suffering severely from the obstruction, it was decided to complete the operation. The patient died two days later. The other four cases died of post-operative broncho-pneumonia, three of them about three weeks, and one four days, after operation. Three of these deaths occurred during the influenza pandemic, when there were many influenza and resultant pneumonia cases in the hospital. None of the three patients vomited, and they each took milk satisfactorily.

Liver Abscess.—A well-to-do Mohammedan, aged 32, was admitted with subnormal morning and evening temperature of a little over 100°. Pulse 104. He was very emaciated. He said very definitely that he had had no symptoms of dysentery. A liver abscess (amœbic) was found by an exploratory puncture in the axillary line in

the 8th interspace. The abscess was drained by Manson's method, a rubber tube being passed through a cannula into the abscess. By a glass connection-piece the drainage tube was attached to a long rubber tube which was continued into a vessel containing an antiseptic under the bed. The abscess was very large. Four and a half pints of the typical pus was drained away during the first 24 hours. During the treatment twenty-nine $\frac{1}{2}$ -grain doses of emetine hydrochloride were given hypodermically. The patient made a rapid recovery.

Hernia.—A patient was operated on for a strangulated hernia. One inch of the bowel was gangrenous and was resected. The ends of the bowel were drained with Paul's tubes. Some weeks later the spur at the artificial anus was destroyed with pressure forceps. Afterwards the bowel was dissected free from the abdominal wall, and delivered through the wound. The margins in the opening of the bowel were trimmed and it was closed with two rows of sutures. The radical cure for hernia was at the same time performed, and the wound completely healed in three weeks. The patient left the hospital with the bowels acting well.

Appendicitis.—One patient complained of having had pain in the region of the appendix for "some months." At the operation the appendix was found to be held in some adhesions. It was removed. Afterwards it was found to be crowded with a large number of thread-worms. At the end of the appendix there was a fish bone, about $\frac{1}{2}$ inch long, one end of which was thickened and jagged. The patient was freed from his pain and made a good recovery.

Peritoneal Cyst.—A woman, aged 48, was admitted with a large fluctuating tumour in the abdomen about the size of a football. The abdomen was opened by an incision extending from the pubis to the ensiform. The cyst did not encroach on the pelvis, and was firmly fixed to the posterior abdominal wall. It appeared to be a peritoneal cyst. Its walls were thickened. Several coils of small intestine were firmly adherent to it, and there were numerous other adhesions. In separating the bowel a tear in it, $\frac{3}{4}$ inch long, was made. It was immediately closed with two rows of sutures. The cyst which was removed contained a large quantity of dark fluid, the colour being apparently due to hæmorrhages. There were no signs of tuberculosis in the glands or peritoneum. The abdomen was closed without drainage and the patient did well.

Mastoid Disease.—A girl, aged 12, was admitted with acute pain in the left ear. Temperature 102°. Pulse 128. A fistula over the mastoid was discharging. The mastoid antrum was opened and found to be full of very foul-smelling pus. The radical mastoid operation

was completed. The patient rapidly improved. The resultant large bony cavity is not yet covered with epithelium, and is being treated with 10 per cent. iodoform and 10 per cent. bismuth subnit. in vaseline.

Excision of Head of Femur.—A boy, aged 14, on whom Kocher's excision of the head and neck of the femur was performed 18 months ago for tuberculous hip disease, has fortunately been persuaded to remain with us until now. On admission there was marked flexion and adduction of the thigh, and two discharging sinuses on the outer aspect of the joint. The sinuses, which after operation were injected weekly with 10 per cent. iodoform and 10 per cent. bismuth subnit., have completely healed. The boy is now very well, the pulse having dropped from 120 to 84, and he gets about easily in a Thomas's hip splint with crutches.

A CASE RESEMBLING YAWS.

By A. J. NORONHA, M.D.,

Hony. Assistant Physician, J. J. Hospital, Bombay.

A HINDU lad, aged about 15 years, was admitted into my wards with an outpatient diagnosis of secondary syphilis. He was born at Ratnagiri and came to Bombay a few years back. All his life he spent in India, and he does not remember a disease similar to his own among his relatives or acquaintances. His complaint began with an injury from a broken bottle on his right ankle where an ulcer with fresh large granulations were present when he first came in. A month or so after this accident he noticed a scattered eruption all over his body which made him seek admission into hospital. He denied exposure to infection in the two most usual ways.

On examination, he was found to have round his anus and over the scrotum extensive condylomata and also scabies on the trunk, genitals and extremities. Raised, yellowish, condylomatous patches, the size of a large split pea, were present on the forehead, lips, trunk and extremities. These were all uniform, the difference being only in size. The site of the injury had a pyriform ulcer the size of an eight-anna piece. The floor was covered with granulations and 'satellites' were present round it. These are well seen in the accompanying photograph. The ulcer showed no great attempt to heal, although evidence of cicatricial tissue was present as the floor was depressed. A seropurulent discharge could be seen issuing from the prepuce which was phimotic. My diagnosis was syphilis, and I sent the patient to the surgeon for circumcision. He was returned from the outpatient department with a request to be sent back after a dose of arsenobenzol. A dose of '6 novarsenobillon was given after a week

of a course of mercury which latter had not the slightest effect on the eruption. I regretted very soon what I had done as I began to doubt whether I was dealing with a case of syphilis. The discharge stopped soon after this, and I found no reasons to send him back to be circumcised. The eruptions began to heal, those on the body becoming black.

I began to think of yaws, and as I had seen no case of this disease I took the patient to Dr. Arthur Powell who said the eruption resembled that of yaws, but he would not risk an opinion until he was convinced beyond a doubt. At his suggestion I took some blood from the vein which he very kindly sent to the Parel Laboratory for examination. A positive Wassermann of + + + was returned.

It may be here remarked that undoubted pus has been described by Dr. Powell in one of his communications about yaws before the Dermatological Society. I give the facts of the case for what they are worth without any definite diagnosis, although the following points seem to be in favour of yaws:—

1. The history of the case.
2. The persistence of the primary sore which began to heal after arsenobenzol.
3. The uniformity of the eruptions. This was marred a great deal by the scabies present. On the latter arsenobenzol had not the slightest effect.
4. The resistance to mercury to which syphilis is said to yield more readily than yaws.

Indigenous yaws in India is unknown.

NOTE BY DR. POWELL, PROF. OF MEDICAL JURISPRUDENCE AND POLICE SURGEON, BOMBAY.

My diagnosis of the case was syphilis, the secondary eruption being a tubercous syphillide.

On the only occasion on which I saw the case, the tubercles were covered by smooth epidermis, in this point contrasting with yaws in which the cuticle or scab soon falls off leaving the raw granulations exposed.

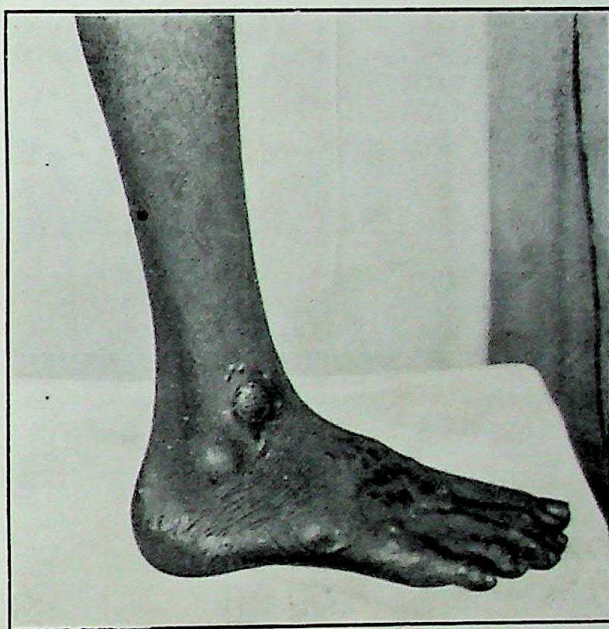
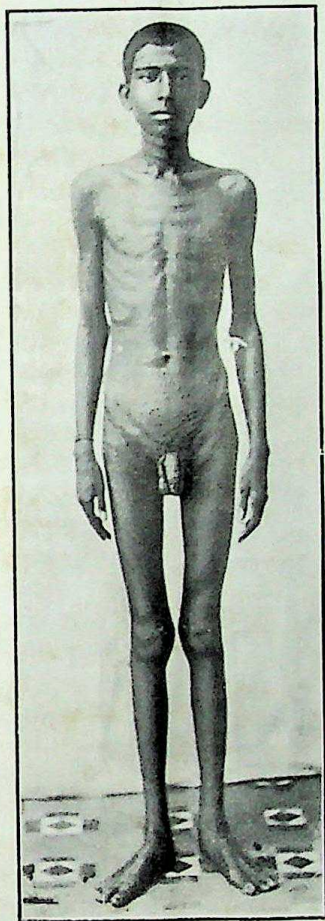
As regards the formation of pus: Pus is naturally found in all cases of yaws when the granulations are exposed. My statement at the Dermatological Society in 1896 was merely to correct the absurd statement by Nicholls in his report that pus is never formed in yaws.

As regards Dr. Noronha's statement that "indigenous yaws in India is unknown," I may say that before I left Assam in 1901, I saw over 400 cases which had spread centrifugally from its original focus, Degubber.

Last month after inquiry the medical officer of that district kindly informed me that yaws cases were common in Degubber, Dankargul, Mulagul and Hilara but none elsewhere. These were the villages in which it was epidemic in 1890-1900 under my observation.

A CASE RESEMBLING YAWS.

By A. J. NORONHA.



TETANUS WITH FACIAL PARALYSIS.

By A. J. NORONHA.



In the eighteen years, I have been in Bombay Presidency, I have not seen a single case of yaws with the exception of the child of a pilgrim just arrived from Java.

This is a striking corroboration of the specificity of yaws.

Of the many thousands of cases of syphilis I have since seen, only two, including Dr. Noronha's, have given me pause in the diagnosis of "yaws or syphilis."

TETANUS WITH FACIAL PARALYSIS.

By A. J. NORONHA, M.D.,

Hony. Asst. Physician, J. J. Hospital, Bombay.

ALTHOUGH this form of tetanus was known for about half a century, the profession at large was slow in appreciating that it did exist and instances have apparently occurred in practice that have been put down to Bell's palsy and the like, the trismus having been explained away in some way or other as due either to irritation of a bad tooth or some such other cause. In my earlier experience with tetanus, I recall a case with transient paresis of one side of the face on the same side as the wound, which latter was at the angle of the mandible. I thought this paresis to be the result of compression of the facial nerve, and I dismissed the subject altogether until I came across the symptoms in the course of my study of the subject.

The accompanying photograph shows two cases that came in one after another. The first case, that of a boy, was a case of general tetanus; while that of the woman corresponds to what Courtois-Suffit and Giroux describe in their monograph as *Cephalic Tetanus with facial paralysis*. One may, however, remark that the latter may be the beginning of the former, and in some cases the facial paralysis may really be the first symptom to be noticed, or more commonly, it may accompany or follow the trismus. In severe cases the paralysis appears very early—as early as the second day. But the seventh day is about its usual period of manifestation. To those interested in the subject, I refer the splendid description given by the above authors.

Case 1.—Baji Gangaram, a Hindu, aged six years, was transferred to my wards from the Petit Hospital for Children on 23rd February.

He met with a motor accident. Four days after the latter he was kept as an in-patient (10th February). The following is an extract from the notes made at the Petit Hospital:—

"Knocked down by a car... Was taken to hospital, wounds sutured and dressed and two drainage tubes were put in... Admitted four days later. There are two large wounds on the scalp—one behind the left ear, and one on top of the head and forehead extending to the right

ear. The wound behind the left ear is crescentic in shape, with the convexity downwards..... The other wound is about ten inches long, extending from one inch above the left parietal eminence and running a little to the left of the median line, reaches the middle of the forehead. Then it curves downwards and outwards half an inch above the right eyebrow, and ends about half an inch in front of the right ear. The edges of the wounds seem to be clean cut for the first four inches, and contused in the remaining part..... The left nasolabial fold is obliterated, and the ala of the nose slightly flattened. He cannot open his mouth fully. When he tries to open it, the left angle of the mouth gets depressed. Patient cannot open his right eye completely owing to the swelling around the eye.

15th February.—There is greater difficulty in opening the mouth, so much so that the patient is unable to take his food properly.

23rd February.—.... The wounds are clean... Temp. 105 last evening. Had two convulsions, one last evening and one this morning. There is rigidity of the neck muscles. The face is grim looking and there is difficulty in swallowing.

So far for the student's notes. There is a little inaccuracy in the description, probably the result of a slip, since, as one can well see from the photograph, it is the right side that is paralysed and not the left, as one might be led to think. I saw the case on the 24th February in the morning. The trismus was not complete and he could swallow. He was getting general spasms on the slightest noise, but they were not very severe. Although the wound was situated on the forehead and temple, the lower two divisions of the facial nerve were the ones affected. The paralysis was present on the day of admission, namely, four days after the injury and previous to the advent of trismus. The latter feature is in favour, although not exclusively, of the paralysis being due to an injury. Personally, I feel inclined to believe that the latter is too high up to account for it.

This patient was treated with subcutaneous and intravenous injections of serum, and also with subcutaneous injections of a 2 per cent. solution of carbolic acid. He has no spasms and no trismus to any great extent, and with the improvement in the latter there has been a more or less proportionate improvement in the facial paralysis.

The second case is that of a woman named Haru Ganput. She was admitted on March 3rd for inability to open her mouth. She had complete trismus and had a cicatrised injury below the left angle of the mouth over the mandible. The area supplied by the lower two divisions of the facial was the one that was affected. Besides a slight stiffness in the back, there was no

inconvenience in other respects. Trismus came on on the third day of the injury. She cannot say when the paralysis developed, but she noticed her lip "dragging" two days after her jaw complaint. If the woman's story prove correct, this is the only case in my series that has run a mild course after an incubation period of three days. No prophylaxis was resorted to in her case. She went about her business for a week, and it was only then, as her back was giving her trouble, that she came into hospital. The only notable feature that attracted my attention was the excess of perspiration that she had. Her trismus has disappeared and the facial paralysis is wearing off. She has been under treatment for over ten days at the time of writing.

Now for a few concluding remarks:—

It will be noticed that in both the cases an injury was present on the paralysed side. This is probably almost an essential, although it is not essential for paralysis to be present in every case of this nature that develops tetanus. This is what I have gathered from a few sources at my disposal. An injury has been present, however, in the occipital region, and paralysis has appeared on the same side of the face in one case. Apparently cases there are that show a complete facial paralysis, due to the action of tetanus toxin on the petrous portion of the facial nerve. Under these circumstances, there are disturbances in the sense of hearing, taste and smell. The authors above referred to, quoting Poan de Sapincourt, describe thus the course of the affection:—"Insidious in its onset, rather tardy in establishing itself, treacherous in its progress, involving a slow recovery or a somewhat speedy death—such, in a few words, are the general characteristics of the facial form of the tetanic infection."

TWO CASES OF POISONING—ANTIFEBRIN AND NAPHTHALENE.

By C. A. OWEN, M.D., F.R.C.S.,
Lahore.

THESE cases occurred within a few days of each other and may be of interest, as very little is said about them in text-books.

ANTIFEBRIN CASE.

Miss M., a spinster of 45 years of age, sent for me urgently at midday on 20th February, 1919. I found her gasping for breath, complaining of distress over the heart, and a feeling of impending death, with blurring vision. The face was purple, eyes congested, pupils dilated, pulse 80, full and tense, mentality normal. The whole body was bluish. Before my arrival 10 minims of liq. strychnia had been given by the mouth. I gave 1/60 strychnine hypodermically and endeavoured to bleed patient with a razor which was the handiest instrument for the purpose and went in fairly deeply, but bleeding was slight and colour of Stephen's ink, with early

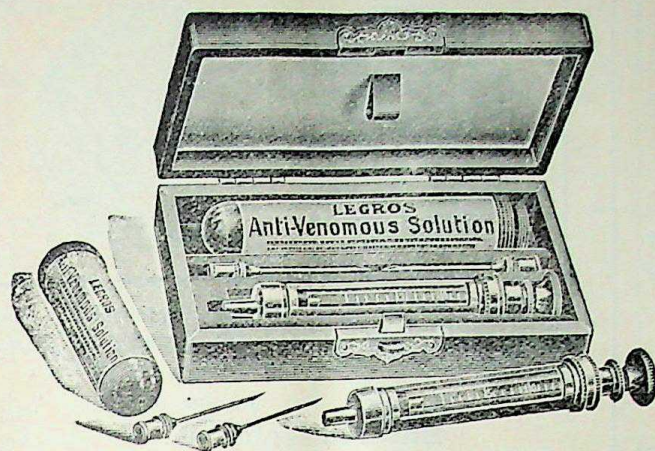
clotting. Temperature was 97·8 in the mouth, and body warmth maintained. The patient would feel better occasionally, but would relapse again into the same condition. The symptoms were perplexing and enquiry showed nothing to account for them, except that the patient had taken 3 grains of calomel overnight and two teaspoonfuls of citrate of magnesia that morning at 7-30 A.M. The symptoms had come on at 9 A.M. On asking to see the magnesia, a bottle was produced with a distinctive label on it of Bishop's Citrate of Magnesia and three parts full. I tasted it and found it bitterish—it would not mix with water or effervesce. I concluded that the stuff belonged to the acetanilid group and examination by the chemical examiner proved it to be antifebrin which had deteriorated from long storage, as the bottle had been in the house several years. The patient then stated that she had found the taste strange and the gentleman, to whom the bottle belonged, stated that he had on previous occasions had small doses out of it and that it affected him adversely, but not to the extent quoted above. The patient made a good recovery, but the cyanosis persisted till next day. There is no doubt that if the drug was at its proper strength the dose she took would have had lethal effects.

NAPHTHALENE CASE.

Urgently called at 2 P.M. on 3rd March to see a child aged 2 years, with the history that, two evenings previously, the mother saw the child swallow a naphthalene ball. A medical man was sent for who prescribed a dose of castor oil. The child seemed quite well till the following night when it was restless and had fever. The same medical man came in again and suspecting trouble tested the urine, but found it normal. During the following day the urine was examined again and found to contain blood. I was then called in. The child was semi-conscious, pulse rapid but good, temperature 103·6 in the rectum, pupils dilated, skin of a lemonish colour (the child was a fair Indian). A saline fever mixture was ordered and cold application to head. At 5 P.M. the condition was about the same, but there were some convulsive twitchings. Temperature 103°. A warm bath was ordered in addition to other treatment. The pulse was good. At 8-30 P.M. when I was called again, I found the child pulseless and death occurred in a few minutes. Naphthalene is said to dissolve in 1—8 of olive oil, and it is presumable that the castor oil administered helped to slowly dissolve the drug, and that the poisoning effects were delayed for practically twenty-four hours. As this is a drug that is in common use, I thought the case would be of interest, and the subject illustrates the advice that in all cases not of corrosive poisoning, an emetic is of great service, and ought to be first

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To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—I beg to send you notes on the use of Michel Legros' Anti-Venomous Solution in cases of snake-bite, which may be kindly inserted in the *Indian Medical Gazette*.

Recently I was called to see a case of snake-bite. A boy, aged about 18, was bitten on his right foot by a cobra at about 7 A.M. The patient immediately after the bite tied a ligature tightly round the leg below the knee with a rope which he carried with him for his cattle, and cried aloud for help. His neighbours hurried up to the place and killed the serpent, which lay hidden in an adjacent bush. The serpent was 4½ feet long, and its diameter at the middle was 5½ inches; many native *ojhas* assembled and tried their *mantras*. At about 8.30 A.M. symptoms of poisoning developed, notwithstanding the three additional ligatures tied by the men subsequently. I reached the place at 9 A.M., when the condition of the patient was as follows:—Eyes opened and turned upwards, the tongue fixed between the teeth which could not be separated, the heart's beat was very feeble, limbs cold. At once I injected 15 minims of Anti-Venomous Solution on the right forearm and 15 minims in two places on the right thigh, which was much swollen. After ten minutes I again injected 10 minims into the left forearm and 15 minims in two places near the site of the bite, and made several incisions near the site of inoculation and freely rubbed in crystals of Pot. Permang. I left the patient at 1.30 P.M., when he could speak with ease and all the symptoms had considerably subsided. He only complained of severe pain in his right leg, for which I prescribed hot Permang. bath. Next morning the patient was all right.

From the above it will appear that the life of the patient was saved by Michel Legros' Anti-Venomous Solution.

It is a very simple remedy, administration of which requires no special skill; my tube of solution was about a year old, and I understand the solution keeps well for several years.

The following points are most important:—The venom is not, as a rule, carried immediately in its entirety into the circulation (except in cases when the bite has penetrated into a vein, in such cases death may be caused immediately). The venom first reaches the small blood vessels, by its own action on blood the local circulation is arrested, and this prevents the immediate diffusion of the poison throughout the organism.

When the poisoning symptoms have already developed, a dose should be injected into the healthier tissues above the wound and swollen parts. Another should be given in two or three places near the site of the bite. This may be repeated if the condition of the patient becomes more grave. The solution must be injected deeply into the tissues for rapid absorption. Medical practitioners can easily and conveniently carry a tube of solution containing four doses at the nominal cost of Rs. 4 per tube.

Yours, etc.,

BINODPUR, JESSORE, }

S. G.,

20th June, 1917. }

Medical Practitioner.

Rational Treatment of Constipation

By the double action of Secretions and Peristalsis.

O P O L A X Y L

Opolaxyl is a combination of the secretions of the liver (biliary), pancreas, and intestines, with vegetable extract of a non-drastic nature.

It combines all the secretions to correspond to nature's therapy, and promotes a flow of bile and glycogen with their hæmatopoietic and antitoxic properties.

It is a normal regulator of the gastro-intestinal functions; consequently it improves the metabolic exchanges in the entire organism.

Opolaxyl does not lose its efficacy by prolonged use; its effect is gentle and constant, without irritation. It is not merely purgative; it stimulates the defective organs and revives the normal equilibrium; it has a lasting effect because it restores the organs, thus correcting diminutional function.

Opolaxyl is put up in small size tabular form easy to swallow, and should be swallowed, without crunching, at bedtime or before breakfast.

DOSE.—For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

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P. O. Box 303, Bombay.

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THE ANGLO-FRENCH DRUG CO., LTD.

(Late M. BRESILLON & Co.),

Gamage Building, Holborn, London, E.C. 1.

Telegrams: "AMPSALVAS, LONDON."

'Phone: HOLBORN, 1311.

NEOCAINE-SURRENINE

Neocaine is a synthetic product of French manufacture.

A Perfect COCAINE SUBSTITUTE of Low Toxicity.

A White Powder, readily soluble in water. Analgesic power, duration, and rapidity of action quite equal to Cocaine.

Toxicity less than one-sixth.

Therapeutical effects identical with Cocaine (excepting as an exhilarant) for Dental or Surgical, local and Spinal Anæsthesia, Lozenges, Snuffs, Ointments, &c.

Composition of Neocaine-Surrenine:

Pure Neocaine	...	...	5 c.g.
Acid Borate of Adrenalin (Takamine)	..	...	0.1 m.g.

Pure Neocaine is also supplied.

FORMS.—Powder in capsules and phials. Ready prepared solutions in Ampoules (various percentages), and Ampoules of sterilised liquid for making solutions.

THE MEDICAL TREATMENT OF CANCER.

CUPRASE

CUPRASE is a colloidal copper hydroxide which is obtained chemically by the reduction of salts of copper in the presence of albuminous acid.

As a result of over ten years' research work on Cancer, Dr. Gaube du Gers produced a new Colloidal Copper Hydroxide which has given remarkable results in *arresting the progress of the disease*, with loss of pain, and great improvement in the general condition of the patient.

The numerous clinical reports from Doctors of repute in various countries, give cases of a great variety. In all of these *pain has been eliminated*, and a good percentage of *cures are claimed*, and in no instance *any undesirable effects*.

Its *easy application* (intramuscular injections) places it within the reach of all practitioners. It is *not toxic*.

Disappearance of the Pain.
Return of Sleep.
Increase of Appetite.
Colour and Strenth.

Supplied in boxes of 8 ampoules.

WARWICKSHIRE, July 1st, 1917.

DEAR SIR,—Will you please send me another box of Cuprase ampoules. The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer—the cauliflower-like growth has disappeared with its offensive discharge.

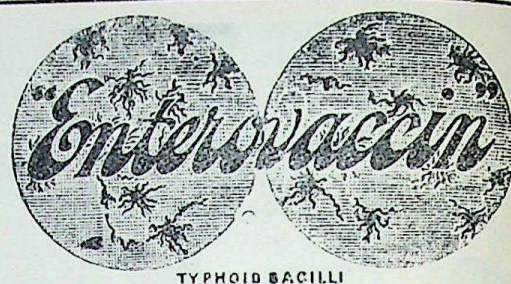
This case was given three months' life by a Specialist, being inoperable.

Yours faithfully,

(Signed) B—B—, M.R.C.S., L.R.C.P.

ANTITYPHOID

Inoculation by the gastro-intestinal tract



The results of **4,000** applications of **Enterovaccin** carried out by approximately 200 Doctors are as follows:

1. **No one** who has been treated with **Enterovaccin** has been attacked by typhoid fever.
2. This method of immunisation is without risk.
3. There is no contra-indication.

Enterovaccin is put up in hermetically sealed tins containing 28 spherules, sufficient for a complete treatment (one week). Each spherule contains per milligramme:

300 millions Eberth bacilli. 180 millions coli bacilli.
120 millions paratyphoid bacilli.

IODEOL

Perfectly tolerated. Never causes Iodism.

Each capsule contains 4 grains of Colloidal Iodine in the most minute form of subdivision known.

It is administered by

INTRAMUSCULAR INJECTION

for

Pneumococcal Disease

—Simple and Infective and

Broncho-Pneumonia

Bronchitis

Pulmonary Congestion

TUBERCULOSIS, &c.

By the Mouth (Capsules):

Syphilis, or wherever

Iodides are indicated.

Iodeol is ten times more

active and does not

cause Iodism.

Externally (Liquid):

Contains 50 per cent. Colloidal Iodine (must not be used for injection), ten times more active than painting with Iodine tincture—does not produce erythema or irritation. Absorption is extremely rapid.

For Gynæcology (Ovule):

These are introduced into the vagina, slowly discharge the Iodine, which penetrates deeply into the vaginal mucous membrane, giving rapid relief from congestion and pain.

Destructive to the micro-organisms.

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IODARGOL

Special Colloidal Iodine.
NON-TOXIC
PAINLESS
FOR THE TREATMENT
of Gonorrhœa: Acute and
Chronic. Urethritis: Of
Old Standing.

DIFFUSIBLE
ANTISEPTIC
ANALGESIC

Cystitis and the Serious Complications of Gonorrhœa.
Ampoules and Phials for Injection or Soluble Bougies.

FOR GYNÆCOLOGY OVULES

UTERO-TOPIQUE
IODARGOL. Direct Intra-
uterine Medication.

As a wound dressing Iodargol on account of its antitoxic and dermoplastic action prevents or ameliorates the fever due to infection, cuts short suppuration, eliminates the sloughing portions and cleans the wound, at the same time stimulating epidermisation and cicatrization.

IODEOL OVULES for Vaginitis, Metritis, etc.

IODEOL CAPSULES contain 4 grains of Iodine in each.
Never cause Iodism.

More powerful and active than Iodine without its drawbacks.

The treatment of Carbuncles, Boils, Anthrax,
Acne, Styes, and diseases arising from
STAPHYLOCOCCUS.

STANNOXYL

(An Oxide of Tin and Tin Meal
free from Lead.)

A truly scientific production the value of which has been studied very closely. The effect is really wonderful; from the second day of treatment the pain is relieved and the carbuncles begin to dry up, those which are just opening are stopped in their course; the core is not expelled but reabsorbed.

In the majority of cases a complete cure is effected by the fifth or sixth day, it is seldom necessary to take the full 10 days' treatment, and relapses are unknown, indeed it is a specific for diseases arising from Staphylococcus.

The daily dose for Adults is 4 to 8 tablets;

Children, 2 to 4 tablets.

Supplied in vials of 80 tablets.

URASEPTINE

*The Most Powerful and Effective
Urinary Antiseptic.*

URASEPTINE is a granulated product entirely soluble in water, its bases being Piperazine, Urotropine, Helmitol, Benzoates of Sodium and Lithium. It contains 60 centigrams (10 grs.) of active matter to each teaspoonful.
DOSE.—2—6 teaspoonfuls daily.

It purifies the Urine, and this action is due to its three principal properties:

1. It is a URINARY ANTISEPTIC.
2. A SOLVENT of URIC ACID and of PHOSPHATES.
3. A MILD NON-TOXIC DIURETIC.

INDICATIONS.—Arthritis, Gout, Gravel, Hepatic and Renal Colic, Rheumatism, Calculus, etc., Phosphaturia, Urinary Antisepsis, Pyelitis, Bacteriuria, Cystitis, Prostatitis, Urethritis, Pyuria, Urinary Abscess, Vesical Catarrh, etc.

ANTIGONOCOCCIC



The clinical reports given by various doctors show that Rheantine gives highly satisfactory results, both in acute and chronic forms of Gonorrhœa and also in the various infectious complications due to Neisser's bacillus.

Rheantine is put up in hermetically sealed tins, containing 28 spherules. Dosage.—4 spherules a day.

Therapeutic Association of Paris (14th June, 1916): the result of their observations:—

"It is not a rare thing," write these authors, "to observe in the very first days a more or less marked recrudescence of the discharge. This negative phase, which, however, is temporary, is always followed by a well-defined positive phase, in the course of which the characteristics of the urethral pus undergo a rapid change; the discharge, which is at first thick, abundant, and creamy, passes gradually into the hyaline state, diminishes in quantity, and in the majority of cases ceases.

"Under the microscope these successive stages are demonstrated in equally definite stages; whatever may have been the duration of the disease, the characteristics of the pus become rapidly modified; after two or three days' treatment the gonococcus, first intracellular, becomes exterior; it ceases to act as a parasite on the polynuclear leucocytes and the large epithelial cells—one then finds them disseminated outside the leucocytes.

"Finally, some days later, if the administration of Rheantine is continued, the condition undergoes still further change, the gonococci become agglutinated, arranged in a mass, and finally bacteriolysed."

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Recurrent Fever SYPHILIS

GALYL

Framboesia and Sleeping Sickness

Practical work with GALYL in the shape of

60,000 INTRAVENOUS (Dilute and Concentrated) and **INTRAMUSCULAR INJECTIONS** administered in Military, Naval and the principal General Hospitals throughout the United Kingdom, has demonstrated that this preparation is **more rapid and less toxic** in action than any compound of the "606" group, which accounts for the **consistently excellent clinical results without any undesirable by-effects.**

Forms:

.....FOR INTRAVENOUS INJECTIONS:—

(1) **DILUTE.**—GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate, sterile distilled water only being used for the dissolution.

(2) **CONCENTRATED.**—A special outfit containing one dose GALYL, one ampoule sterilised solution, and one small filter is supplied.

Doses:

0.10—0.15—0.20—0.25—0.30—0.35—0.40

(3) **FOR INTRAMUSCULAR INJECTIONS:—**
GALYL is supplied in **OILY EMULSION.**

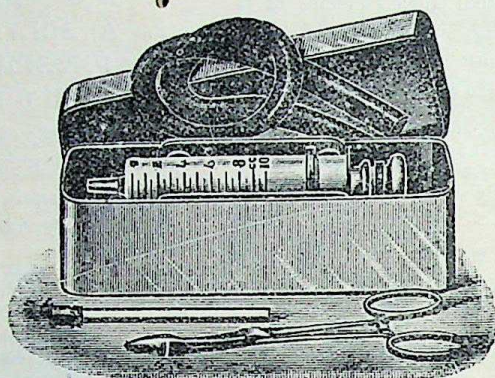
Doses:

0.10—0.15—0.20—0.30—0.40.

POCKET CASE

Containing the entire instruments (sterilizable) necessary for administering a concentrated intravenous injection of GALYL or other solution.

- 1 India-rubber Tube for constricting the arm.
- 1 Clamp for fixing the rubber band.
- 1 Glass Syringe of 10 c.c. capacity.



- 1 Platinum-iridium Needle, length 4 cm., diameter 0.9, with short bevelled joint and special barrel. Attachable to the syringe without any additional junction.
- 1 Nickel-plated Case to hold all the above.
- 1 Chamois Leather Pouch.
- 1 Glass Filtering Tube, with rubber attachment.

Price complete 30/-

HECTINE

Formula: Sodil Benzo-sulpho-p-amniaphenyl arsonas.

Dr. Mouneyrat—the discoverer of Galyl (the well-known and widely adopted French Neo-Salvarsan substitute) and also Hectine, a compound which—though it possesses a very low arsenic percentage and has proved most safe in use—gives remarkably successful clinical results in syphilis and the parasymphilitic affections. Hectine has a record of about one million injections.

Hectine is not only a specific in syphilis, but it acts as a general tonic in the treatment of bloodless and anæmic patients and in all cases where **Arsenic** is indicated.

In malaria it acts as a specific owing to its anti-parasitory and anti-thermic actions; also in tuberculosis, rachitism, neurasthenia, asthma, chorea, skin diseases, etc., etc.

Hectine is supplied in hermetically sealed ampoules for intramuscular injections.

Ampoules A—containing 10 c.g. in 1 c.c.

Ampoules B—containing 20 c.g. in 1 c.c.

Pills (in phials of 24) 10 c.g.

HECTARGYRE

(Mercurial Salt of Hectine)

Hectargyre being a **double specific** cures syphilis and all its manifestations more rapidly and more surely than any other mercurial preparation.

As a treatment following Galyl, or *ab initio* in all stages of the disease, Hectargyre is very effective and rapid; it is well tolerated even where prolonged treatment is necessary; the most intractable cases of syphilis have yielded highly satisfactory results.

Hectargyre is supplied in sterile ampoules for intramuscular injections.

Ampoules A containing—

Hectine 10 c.g. } in 1 c.c.
Hg. 1 c.g. }

Ampoules B containing—

Hectine 20 c.g. } in 1 c.c.
Hg. 1½ c.g. }

Pills containing—

Hectine 10 c.g.
Protoid of Hg. 1 c.g.
Opium Extract 1 c.g.
(In phials of 24 pills.)

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Indian Medical Gazette.

MAY.

SIR WALTER BUCHANAN, I.M.S., AND "THE INDIAN MEDICAL GAZETTE."

THE *Indian Medical Gazette* appeared first in January 1866, under the editorship of D. B. Smith. Since then it has been published regularly every month.

It has proved itself the most successful and the most important medical paper issued in India. During the fifty-three years of its life, the success of the gazette, from a medical standpoint, has been mainly due to two men—Colonel Kenneth McLeod and Lieutenant-Colonel Sir Walter Buchanan. Between them these two have occupied the editorial chair for over forty years.

The success of *The Indian Medical Gazette* as business proposition is to a large extent due to Messrs. Thacker, Spink & Co., who assumed charge in 1885. Sir Walter Buchanan took over the editorship of the gazette in May 1899, and for just twenty years he has done yeoman service for the advancement of medical matters in India. Since he first assumed charge very great improvements have been made in the publication of the gazette, and, in accordance with the advances in medical science, the papers published have gradually become more scientific and precise.

It has always been the aim of *The Indian Medical Gazette* to be a medical paper pure and simple, and not allow its columns to degenerate into a medium for the airing of personal or service grievances. This policy Sir Walter maintained during the long period of his responsibility for its publication.

The Indian Medical Service, on account of its numerical superiority and its close interest with the medical requirements of the people of India, has naturally been the chief supporter and the source from which the gazette drew a great measure of its contributions and strength. Its columns, however, are open to all who wish to bring to the notice of their fellow-practitioners anything for the good of medicine and for the benefit of mankind.

Sir Walter Buchanan during the last twenty years has earned for himself, as an eminently fair

and considerate editor, the respect and admiration of the contributors to, and readers of, the gazette.

He laid down the reins of office on the completion of the April number of the gazette, and as editor, as an official, and as a man, has proved himself not only the greatest editor the gazette has ever had, the most efficient and considerate of officials, but, what is perhaps of more interest to the majority of our readers, also an exceedingly popular man; and his popularity with all ranks and conditions of men sprang from the right source—an inherent kindness of heart and disposition. Last year, when the K. C. I. E. was conferred on him for his lifelong official work, everyone was delighted, and no more popular honour has been given in India for years.

Although he has completed the full term of service, and despite the fact that his official duties caused him to come more into touch with the more senior men of the different services, Colonel Buchanan has not allowed himself to grow into old age. His advice, friendship and kindly consideration were always open to the last-joined recruits of his own or any other service; and many there are who have a warm place in their hearts for him, and thank him for the kindly word or active assistance given freely and whole-heartedly when most required. He thus endeared himself to all who came into daily contact with him, and through the editorial columns of *The Indian Medical Gazette* he got into touch with a very large number of officers and medical men all over India and the East.

In an appreciation of his work in connection with *The Indian Medical Gazette*, one does not feel justified in referring to his private affairs. It is, however, well-known to most of us that during the great war he carried out his duties, as Editor and Inspector-General of Jails, in the most exemplary manner, despite a very great family bereavement, and despite long periods of acute anxiety as to the fate of his only son, who, with the famous 7th Division, fought and bled through Flanders and France in the early black days of the war. We of *The Indian Medical Gazette*—in all capacities connected therewith—offer to him our deepest sympathies on the sad loss sustained, our heartiest congratulations on his son's recovery from his third and

exceedingly dangerous wound, and our felicitations on the gallant and heroic example of his son's bearing, his rapid promotion, and the honours awarded him for distinguished conduct in the face of the enemy. We also wish Sir Walter a long and happy life after retirement, and hope that he may for many years live to enjoy the fruits of his labours and his well-earned rest from toil.

SIR WALTER BUCHANAN, "THE INDIAN MEDICAL GAZETTE" AND EPSOM COLLEGE.

There has been a very general feeling amongst all classes of those who have had the pleasure of knowing Sir Walter Buchanan that something should be done to commemorate his long connection with *The Indian Medical Gazette*. This feeling extends to other parts of India than Bengal, and to large numbers of readers of the gazette who have not the pleasure of his acquaintance: at least it would appear that such is the case, judging from the number of letters and suggestions that have been received from all parts of the country.

In Calcutta and amongst the officers of the Jail Department this feeling or desire to do him honour took the shape of dinners, presentations and addresses. The Bengal United Service Club gave a large dinner in his honour on St. Patrick's Day—a fitting day to pay tribute to a distinguished son of Ireland. The members of the Club gave him a most enthusiastic send-off, and demonstrated in no uncertain manner their friendly feelings and good wishes.

These tributes are, of course, very flattering and pleasing at the time, but it is felt that the retirement of one so popular and well known should be marked by something of a permanent nature, which would remain for all time as a remembrance of his large-hearted kindness and genial disposition, and also as a link to connect his name with the success of *The Indian Medical Gazette*. The Hon'ble Major-General W. H. B. Robinson, C.B., I.M.S., put forward the suggestion that funds might be raised to found a scholarship at Epsom College. This idea was most favourably received, and when announced by the President of the United Service Club, in proposing Sir Walter Buchanan's health at the dinner referred to above, met with hearty acceptance and approval.

We publish below a letter from Sir Henry Morris, which will bring home to our readers the very great need that has arisen for a greater measure of support. His Majesty the King in his speech at the last festival dinner said: "... I can hardly imagine that there are any more deserving of public support than those whose object is to help members of the medical profession or their families who, through misfortune or otherwise, are brought to reduced circumstances." Owing to the war, the increased cost of everything, taxation, and a falling off of subscriptions, there is a very great danger that a reduction in the number of the fifty foundation scholars, who receive a high-class education free—being boarded, clothed, and maintained at the expense of the College—may be necessary. This unfortunately may take place at the very time when help for the families of necessitous medical men is most required, as many have fallen in the war, offering their lives freely for their country, but have left behind them widows and orphans poorly provided for.

It is proposed, therefore, to do all in our power to assist Epsom College, and at the same time to commemorate Sir Walter Buchanan's long association with *The Indian Medical Gazette*, by raising subscriptions to establish a fund—to be called the Buchanan Fund—with which, or, if sufficiently large, with the interest that accrues, to provide one or more scholarships for the sons of legally qualified medical men of pure British parentage, who are or have been officers of the Indian Medical Service, or, failing any such candidates, the sons of private medical practitioners of pure British parentage who have been in practice in India not less than five years. There are few amongst us who do not know of many sad cases.

British medical officers, or medical men in practice in India, are exceedingly likely to lose their health, or even life itself, and leave their families very ill-provided for. To such, the assistance Epsom College already provides is a veritable boon and blessing: this might be considerably enhanced if the Buchanan Fund is liberally subscribed to and made a fund worthy of the man whose name it will bear, worthy of the object for which it is raised, and worthy of acceptance at the hands of the Council of Epsom College.

Judging from the offers of help and assistance already received, we have little doubt but that an amount, worthy of the good object for which it is being raised, and creditable to the generosity of all readers of *The Indian Medical Gazette* and admirers of Sir Walter Buchanan, will be forthcoming.

The sum we hope to reach is, at the minimum, £1,000. The interest on this will provide a yearly scholarship of £50, and thus go far to educate one orphan or son of a medical man in need of assistance. The greater the response, so much the greater the help and assistance that can be meted out to the widow and orphan by Epsom College.

Messrs. Thacker, Spink & Co. have very kindly offered to receive the subscriptions and look after the business side of the fund, free of all charges, and a committee composed of the Honourable the Surgeon-General with the Government of Bengal, the Principal, Medical College, Calcutta, and the Editor, *Indian Medical Gazette*, met and decided that the total amount collected for the "Buchanan Fund" be handed over to the Council of Epsom College to administer, subject to the following conditions:—

(i) The scholarship be named, "The Buchanan Scholarship."

(ii) The Buchanan Scholarship is primarily intended for the sons of deceased or prematurely invalided officers of the Indian Medical Service, or, failing any such candidates, for the sons of legally qualified medical men of pure British parentage in necessitous circumstances who have practised medicine for at least five years in India.

(iii) The scholarship will be awarded annually, bi-annually, etc., or every two, three, four, etc., years as funds permit, at the discretion of the Council of Epsom College.

It is hoped and fully expected that a liberal response to this appeal to our readers will be forthcoming; many of the more senior medical officers will doubtless contribute freely and generously, but if each of the others decided to give one day's pay, there would be practically no difficulty in raising sufficient to establish one "Buchanan" scholarship.

In the meantime, we have great pleasure in stating that the Director-General, Indian Medical Service, the Honourable Major-General W. R. Edwards, C.B., C.M.G., I.M.S., is very

interested in the raising of sufficient funds to establish one or more scholarships.

Already we have received promises of support from a large number of the medical officers and others in Calcutta.

The list at present is as follows:—

	Rupees.
The Honourable Major-General W. R. Edwards, C.B., C.M.G., Director-General, I.M.S.	200
The Honourable Major-General W. R. B. Robinson, C.B., I.M.S.	100
Lieutenant-Colonel F. O'Kinealy, I.M.S.	500
" " D. McCay, I.M.S.	500
The Proprietors <i>Indian Medical Gazette</i>	500
W. Kirkpatrick, Esq. (Messrs. Bird & Co.)	175
The Honourable Colonel J. K. Close, I.M.S.	100
Lieutenant-Colonel Sir Leonard Rogers, C.I.E., I.M.S.	150
Lieutenant-Colonel A. Leventon, I.M.S.	150
Lieutenant-Colonel C. R. Stevens, I.M.S.	150
Lieutenant-Colonel W. D. Sutherland, I.M.S.	150
Lieutenant-Colonel J. T. Calvert, C.I.E., I.M.S.	150
Lieutenant-Colonel R. P. Wilson, I.M.S.	150
Lieutenant-Colonel D. Green, I.M.S.	100
Lieutenant-Colonel W. R. Newman, C.I.E., I.M.S.	100
Sir Francis Stewart, C.I.E. (Messrs. Gladstone, Wyllie & Co.)	100
A. R. Murray, Esq., C.B.E. (Messrs. Thos. Duff & Co.)	100
Lieutenant-Colonel H. M. Halliday, I.A.	50
K. K. Chatterjee, Esq., F.R.C.S.I.	50

Cheques should be crossed and made payable to Messrs. Thacker, Spink & Co., or Editor, *Indian Medical Gazette*.

EPSOM COLLEGE.

The following is the Honorary Treasurer's appeal for assistance to enable the Council to continue the good work being done by Epsom College and its Royal Medical Foundation:—

SIR,—It is again my duty, as treasurer of Epsom College, to make an earnest appeal for new subscriptions, in order that the council may be able to maintain undiminished the work of the Royal Medical Foundation attached to the College.

As your readers will recollect, this work consists of two branches—namely, pensions of £30 a year are given to fifty aged and impecunious medical men or their widows; and an education of the highest class at Epsom College is provided for fifty necessitous sons of medical men, who also receive gratuitously maintenance, clothing, and pocket money. In consequence of the numerous calls in connexion with the war, in addition to the increase of taxation and the general rise in prices, many annual subscriptions have been withdrawn, whilst others have been reduced in amount.

Applications for assistance are being received as a direct consequence of the war, and already the Governors have elected as foundation scholars (1) the son of a medical officer who was killed in action on the *Good Hope* in 1914; and (2) the son of another medical officer who was killed in action in 1917. Furthermore, Salomons Entrance Scholarships of £50 a year have

been awarded by the council: (1) to the son of a medical officer who was killed when the *Royal Edward* was torpedoed in 1915; and (2) to the son of another medical officer who lost his life when the *Arcadian* was torpedoed in 1917.

I earnestly appeal to those of your readers who already support the foundation to increase their contributions, at least for a few years, if possible; and I urge upon those who do not at present subscribe annually to do so. To the latter I wish especially to make this request, at a time when so many members of our profession, their widows or their orphans, are in need—and I beg of them to be so good as to respond sympathetically to this appeal at once. A sum of not less than £4,500 must be procured in annual contributions if the numbers of beneficiaries are to be maintained.

I am, etc.,

HENRY MORRIS,

LONDON, W.,
November, 29th.

*Honorary Treasurer of Epsom College
and its Royal Medical Foundation.*

SIX MONTHS' ACCUMULATED PRIVILEGE LEAVE.

HIS MAJESTY'S SECRETARY OF STATE FOR INDIA has been pleased to sanction the proposals of the Government of India for the accumulation of privilege leave up to a maximum of six months. The following are the conditions on which the concession will be granted:—

(i) The concession will be granted to those officers only who have, at any time during the period between the 4th August, 1914, and either the 31st December, 1921, or the first date on which they take leave after the 1st January, 1919, whichever is earlier, been debarred by the operation of article 246 of the Civil Service Regulations from earning privilege leave.

(ii) On the first occasion on which such an officer is allowed to take leave after the 1st January, 1919, the period during which he was so debarred will be taken into account in calculating the amount of privilege leave earned by him. In certifying the amount of privilege leave due to him, the audit officer will add to the total admissible under the ordinary rules an additional period calculated on the period of service during which the officer was so debarred. This additional period will be limited to three months.

(iii) The full amount of privilege leave, as increased by this concession, may be combined with other kinds of leave under article 233 of the Civil Service Regulations.

(iv) If the leave actually granted to an officer is less than the full amount of privilege leave at his credit as calculated under clause (ii) above,

he will be entitled to take the balance of such privilege leave, together with any privilege leave which he would, under the ordinary rules, have earned by his subsequent service if there were no accumulation to his credit, when next he takes a leave: provided that, if on the first occasion on which he takes leave after January 1st, 1919, he combines with other leave privilege leave to a less amount than stands to his credit, the balance of the privilege leave at his credit will lapse, and he will not be entitled to enjoy it on a subsequent occasion. The total amount of privilege leave to be enjoyed under this clause on the second occasion of taking leave is limited to a maximum of six months; and no balance may be carried over to a third period of leave.

(v) The concession will be admissible to officers who take leave preliminary to retirement, provided that privilege leave is taken in combination with other leave, the total period of combined leave being not less than six months.

2. I am to explain that, as in the case of privilege leave taken under the ordinary rules, acting arrangements only may be made in place of officers granted privilege leave under these orders for a longer period than three months.

LEAVE FOR OFFICERS WHOSE SERVICES HAVE BEEN EXTENDED AFTER ATTAINING THE AGE OF SUPERANNUATION.

The Government of India have had under consideration the case of officers who, after attaining the age of superannuation, have been granted extensions of service in the public interests, and have, owing to war conditions, been prevented from taking leave. With the approval of His Majesty's Secretary of State for India, it has been decided to grant to such officers the following concessions:—

(1) In addition to leave admissible under articles 301, 345, 555 and 620, Civil Service Regulations, furlough also will be admissible.

(2) When an officer is granted leave with the intention that he should return to duty, the total leave granted at one time must not exceed six months.

(3) The condition that officers granted leave after attaining the age of superannuation must return to duty (*vide* notes to articles 301, 345 and 620 (a), Civil Service Regulations), should be waived.

(4) The total leave to be granted to an officer preparatory to retirement must not exceed the amount which the Local Government or other authority empowered to grant leave considers that, in all the circumstances of the case, he would have been allowed if it had been consistent with the public interests to grant him leave preparatory to retirement before he attained the age of superannuation, and it should be subject, in all cases, to a maximum of 12 months.

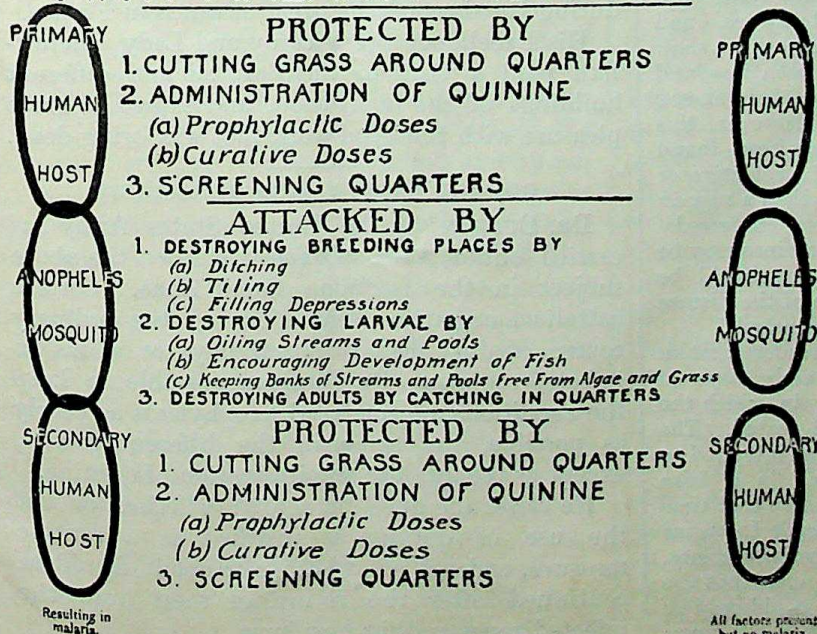
2. The concessions made in clauses (3) and (4) above will be admissible to those officers only who have received their first extension of service since the commencement of the war, and the determination of the amount of leave to be granted on the terms laid down in clause (4) is left entirely to the discretion of Local Governments. Although the grant of furlough or combined leave preparatory to retirement may block promotion, it is not a valid ground for giving any special concession to officers whose promotion may be blocked.

Current Topics.

ANTI-MALARIAL MEASURES.

THE following graphic method of describing the necessary anti-malarial measures is taken by from a paper by Major E. E. Persons, M.D., Medical Corps, U. S. A., and General Inspector Health Department, Panama (*Proceedings of Medical Association, Isthmian Canal Zone*. Vol. IX., pt. 1.)

ANTI-MALARIA MEASURES



CURATIVE VALUE OF IPECAC AND ITS ALKALOIDS.

THE Journal of the American Medical Association publishes a paper by Dr. Simon on the above subject, which was followed by a discussion on the problems raised by the difficulty of eradicating the cystic state of the amœba.

There is universal concurrence of opinion as to the highly specific effect of ipecac as well as its constituent alkaloids in amœbic infections.

After the extensive use of emetine, the evidence points to the conclusion that while emetine does prove of undoubted service in the destruction of free living amœba, it meets with marked failure in chronic and intractable cases where the amœbæ have got into a cystic stage.

Emetine in small doses is not only inadequate to remove the cysts, but it tends to encourage the formation of cysts. Though it rarely shows any poisonous effect with ordinarily used small doses, yet mild forms of toxæmia, as neuritis, diarrhoea, gastric irritability, cardiac arrhythmia, are sometimes encountered.

In view of the inadequacy of the alkaloids in removing the encysted endamœbæ, treatment with crude ipecac root is advocated.

The root, when properly employed, not only destroys the vegetative endamœba, but the encysted forms as well. The superiority of the effect lies on the degree of concentration of the active constituents of the specific drug at the site of infection.

The alkaloids could only be given in small doses with safety, and that becomes attenuated in the blood stream and rendered relatively inert when brought to bear on the infecting organism. With the use of massive doses of ipecac orally, a concentration of the effective properties could be obtained without any possible danger of toxæmia.

Ipecac root is given as salol-coated pills of 5 grains each, 10 to 15 at night, and continued for ten days. If it is not tolerated, duodenal intubation has been suggested.

VACCINATION AGAINST INFLUENZA.

IN view of the recent announcement of the discovery of the causative agent of Influenza, Trench fever, Nephritis, Typhus, etc., by Colonel Sir J. Rose Bradford, I.M.S., and his co-workers, the following extracts from the *Medical Journal of South Africa* is of considerable interest.

This is enhanced by the fact that during the height of the epidemic in India, it was freely stated and believed by large

numbers that prophylactic and curative treatment by vaccines was most successful in South Africa.

So much indeed was this the case that the method of preparation, dose, etc., were cabled for, and there were those who were very much inclined to criticise the Government and the medical authorities for remissness in not having a suitable vaccine turned out by the gallon. It has been the experience of most medical practitioners to observe rapid cures in many cases after the injection of some vaccine, but unfortunately for the patients and for the specificity of the vaccine, it has also been one's experience to see its failure in a much greater number of seemingly similar cases. We all know that the majority of patients recover with the ordinary simple treatment of fever: this fact accounts very largely for the apparently good results that are said to have been obtained from vaccine therapy.

The Journal of the American Medical Association, dated November 9, 1918, enjoined caution in the acceptance of statements, by not wholly disinterested parties, as to the efficacy of vaccines in the prevention of influenza. A similar diffidence in regard to the recommendation of vaccines in this connection is to be found in the Memorandum issued by the Royal College of Physicians of London, published in the *British Medical Journal*, dated November 16, 1918, which most of our readers have doubtless read.

We now reproduce the following abstract from the "Public Health Reports" of the United States Public Health Service, Vol. 33, No. 44, November 1st, 1918:

In view of the exaggerated and, in some respects, misleading statements that have appeared in the public press regarding the value of bacterial vaccines in the prevention and treatment of influenza, and the pneumonias which so often complicate it, the following statement is made:

"The evidence that has been presented so far does not warrant the reposing of confidence in any influenza vaccine for either prophylactic or therapeutic purposes.

"Several vaccine preparations made of the influenza bacillus, some from streptococci, some from various types of pneumococci and other organisms, have been recommended and used in various localities, and evidence has been advanced which has been held to show that the number of persons attacked has been less and the deaths fewer among the vaccinated than among those who had not been treated. When, however, this evidence has been carefully analysed, it has been found that either there was no indication of protective or therapeutic value, or there was no more than a suggestion that possibly some protection had been conferred.

"At present it can be said that vaccines may be used in a purely experimental way, and pains should be taken to collect data on the incidence of the disease among both the vaccinated and the unvaccinated."

It will be in the knowledge of our readers that an emphatic protest was entered in the early days of the late epidemic against the manner in which the universal use of vaccine was officially advocated. The protest, which would appear to have been intended to save the Government from placing itself in a false position, drew attention to the fact that at that time there was no scientific evidence that Epidemic Influenza could be controlled by the use of bacterial vaccines. It further implied, in no uncertain manner, that the general use of vaccines for this purpose could only be regarded as an experiment.

its source a considerable amount of obloquy, but it must be some satisfaction to those responsible for the protest to find that the attitude then taken up has received the endorsement of such responsible authorities.

It may be that a carefully planned experiment would show that a mixed vaccine would prove of some benefit in mitigating, or possibly preventing in a certain proportion of instances, the severe complications of Epidemic Influenza. But let us be honest and admit that, in the present state of our knowledge, the use of vaccines in this disease is purely experimental. It may, in individual cases, appear to have been successful; but this treatment has not as yet received conclusive scientific endorsement, either here or in any other part of the world. Until such endorsement is forthcoming, our patients and the public should be taken fully into our confidence with regard to the experimental character of the procedure.

GOOD WORK IN KASHMIR.

THE report of the Kashmir Medical Mission of the Church Missionary Society for 1918 reveals a record of a very fine year's work on behalf of the medical staff and their assistants. A very large number of operations were performed, running to nearly one thousand major and over three thousand minor operations. Cancer and bone disease seem to be very prevalent, and, of course, eye conditions requiring surgical interference are very numerous.

Dr. Neve says the work is always most varied and very interesting: the great drawback is that cases, particularly septic conditions, come too late for effectual treatment.

The influenza epidemic reached Kashmir and accounted for many deaths. Dr. Neve speaks highly of the value of a combination of creosote and iodides in pneumonic cases.

Tuberculosis is spreading and is alarmingly prevalent. Gland and bone and joint lesions, due to tubercle, are exceedingly common.

Major Arthur Neve was still on war service, and an interesting letter is published from him written during the days of the great advance in France.

His Excellency the Viceroy and Lady Chelmsford paid a visit to the hospital and different buildings of the institution, and expressed great pleasure with the good work that was being done.

QUININE PROPHYLAXIS OF MALARIA.

DR. DUNHAM of the United States Army has carried out a series of experiments on the above subject in the Isthmian Canal Zone. Certain battalions or parties of men during the ordinary course of duty had to spend days or weeks in infected regions. Dr. Dunham was able to keep the conditions on malarial prophylaxis as nearly as possible, the same in the different parties, except as regards the administration of quinine.

He raises the question again: whether or not the use of quinine is justified as a routine measure, and, if so, whether or not it should be continued after the return of men from the infected regions and for how long.

He states the use of quinine prophylactically lessened the incidence of malaria and reduced its severity in those who acquired the disease.

When continued after the men left the infected region, no cases of malaria occurred. One to two weeks' continuance of the drug is necessary to prevent relapses or attacks after the return of those exposed to healthy surroundings.

The dose recommended is 0.6 grm. or 9-10 grms. daily.

THE MORALS OF LONDON.

SOME weeks ago the editor of a journal for women, published in the United States, addressed a letter to the *Times* deploring the sexual temptations to which American soldiers were exposed in the streets of London. The editor, one of a deputation visiting this country as a guest of the Government, wrote in no unfriendly spirit; but he certainly conveyed the idea that the American soldier would face dangers in our metropolis that do not exist in great cities on the other side of the Atlantic. If any of us have felt distressed that London should be held up as an exceptional centre of vice, we may find some comfort in statistics recently published by the Surgeon-General of the United States Army. He tells us that over 80,000 cases of venereal diseases were recorded in the United States Army between September, 1917, and June, 1918. Of those men who came into camp, about 128 per 1,000 were infected with venereal diseases. Again, the U. S. A. Council of National Defence record that during the twelve weeks ended December 7, 1917, there were reported from 31 camps 21,742 new cases of venereal diseases. These figures appear to refer to American soldiers who have not yet served with the Expeditionary Force in Europe. The Surgeon-General also gives some interesting figures regarding the incidence of venereal disease in the American and British forces respectively before the war. Thus he shows that the venereal rate per 1,000 in the United States Navy in 1907 was 139.75, whereas the rate in the British Navy in 1908 was 122.49. In the British Army the rate was 75.8 per 1,000 as against 196.99 per 1,000 in the United States Army. These figures suggest that men serving in the American Expeditionary Force are not wholly unacquainted with sexual vices and their consequences even before they have faced the dangers of our capital. No doubt there are centres of iniquity in London, but even in this time of social upheaval experienced observers have expressed agreeable surprise that the standard of conduct has been so well maintained in spite of reduced police supervision.

—*The Medical Officer.*

NEW BOOKS FROM BURMA.

LIEUTENANT-COLONEL C. C. S. BARRY, C.I.E.,
I.M.S., Lecturer in Midwifery and Gynæcology

Burma Government Medical School, has published two useful little books on Gynæcology.

"When and How to perform a few Minor Gynæcological Operations" will be found to contain a mine of information within its hundred or so of pages. The author's object is to encourage the practitioner to perform simple gynæcological operations to relieve the sufferings of the women of Burma. The Burma woman, unlike her Indian sister, does not object to be treated by a male doctor, so that there is an enormous field for those energetic enough to take up such work.

It would be a great boon to sufferers and would at the same time educate the Burman and bring home to the Burmese women the benefits to be gained from Western methods of treatment.

Colonel Barry is to be congratulated on the very full, concise and instructive account he gives of the different conditions that require operation and the best methods of performing them. The operations advocated are all of a simple nature, require very few special instruments and should be capable of performance at any of the smaller district hospitals.

A most useful chapter on the administration of chloroform and delayed chloroform poisoning is given. This is a subject that is of very great importance and one sometimes badly neglected by students.

Colonel Barry's second publication is one on "Clinical Examination and Note-taking of Gynæcological Cases." It is compiled with a view of helping students in their ward work and will be of great service to both students and teacher. Many useful hints and instructions are given and the great value of physical signs and their proper interpretation is kept prominently in the foreground.

"WAR" BREAD AND THE GROWTH OF CHILDREN.

AN echo of the time when opprobrium was heaped on "war" bread appears in the school medical report of Dr. F. G. Haworth (Darwen, Lancs.). In the course of inspection he was struck by the low height and weight of the group of scholars examined as compared with those of former years, and naturally cast about for some explanation. At every age period, except in the case of a few 4-year-old children, amongst both boys and girls the figures came below those of the anthropometric standard, and this was most noticeable in the 13-year-old group. For boys, the average height as well as the weight at all group ages were below standard, and for girls, the average height at seven years and at twelve years was above, but in weight all were below standard. The figures compare unfavourably with those of the preceding year, and though the scholars examined are not the same children whose records were taken in the previous year, yet the fact that corresponding groups in

successive years show a decrease in average height and weight is considered sufficient reason to conclude that there has been a diminution in the general growth. "It cannot be in the surroundings," Dr. Haworth argues, "because they are not changed. We are inclined to blame the war for every ill which may befall us, and, indirectly, it is undoubtedly the actuating factor. So far, we have not suffered from shortness of food. Some articles are more difficult to buy than others; but the one food which has changed in character more than any other is the bread; and, in a great many homes, this is the staple food for young and old. Bread forms the staple food of all of us; but this is more so with children. It comes on at every meal, and its unsatisfying character almost compels its use between meals. It follows, then, that more bread, rather than less, is needed. Theoretically, it may be better for us than the better-milled white-flour bread, but I doubt this in actual fact. War bread does not satisfy one like the white bread did. In my opinion, there is more waste from war bread and this is what one would expect—this throws more work on the excretory organs of the body. The children have not gained weight, because the total average weights at each age period is not as high in 1917 as it was in 1916."

The speculation is interesting, even though it does not form a conclusive argument, for the same set of observations might equally well be used to support the theory that deficient nutrition was due to the use of margarine in place of butter in consequence of the former being lacking in that group of vital substances commonly called "vitamines," which are present in the natural product but not in the "war" substitutes. The important point, however, is, that Dr. Haworth draws attention to the large part played by bread in the dietary of the poor, and that until a better knowledge of food values and dietetics is instilled into these households, the nutritional value of the loaf should not be sacrificed merely to produce an appearance more pleasing to the eye.—*The Medical Officer*.

THE LEAGUE OF EMPIRE APPEAL.

ALL parts of the British Empire are likely to be interested in the bold scheme for a new Imperial Teachers' Headquarters to be established in London under the auspices of the League of the Empire. At present teachers visiting Great Britain have nowhere in particular to go, either to reside or to meet friends or educationalists. They take their chance and they miss many opportunities of securing comfortable quarters, of mental improvement, of hearing addresses by leading men and of exchanging views with fellow-teachers. The League proposes to alter this. The New Headquarters, which

are to cost £50,000, will be a Residential Club of great magnitude, will possess a first-class Library, and will offer facilities for private gatherings and public Conferences which it will arrange. It will help forward, too, the interchange of teachers which the Public Schools and the other Educational Authorities—such as the London County Council—are finding so helpful. When the sum is secured, all will be ready by the autumn, since existing buildings can be utilised.

To help with the raising of the sum needed, the rooms will be "named" after the chief donors, whether they be individuals, organisations or districts, and there will also be mural tablets recording the help from both Great Britain and Overseas. The sum of £500 will "name" a Bedroom, and £5,000 a Reception-room. Queen Alexandra and the Duke of Connaught, both of whom are strong supporters of the movement, have each "named" Reception-rooms. Smaller sums will secure mural tablets, and the names of all the donors will be recorded in book form for permanent remembrance of how the scheme was inaugurated, more especially as it is to be a War Memorial of the services and patriotism of the Teachers of the Empire in the Great War. Lord Beresford is the Honorary Treasurer, at General Buildings, Aldwych, London, W. C., and those Overseas who wish to help have only to write to him, notifying that they will undertake the representation of their part of the Empire, and indicating how they propose to operate. At the end of their efforts the sum collected can be forwarded to him, but in the meantime the Hon'ble Organiser, Mr. Frederic E. Catling, at the same address, will gladly assist in every way possible. The British Government is, it can be stated, warmly sympathetic to the scheme and its objects.

THE WAR AND VITAL STATISTICS.

IN his presidential address to the Royal Statistical Society, Sir Bernard Mallet, the registrar-general of births, marriages and deaths, referred to the overwhelming importance of the whole question of racial advance or decline, on which the fate of nations so largely depends, and to the damage that the present struggle must inflict on this and other nations. Dealing with the effect of war on marriages, he said that the number of marriages increased steadily from 260,544 in 1909 to 286,583 in 1913, and that this increase was continued in the first two quarters of 1914. Although the increase in the latter half of 1914 was smaller than that in the earlier half, during the second, third and fourth quarters of 1915 and the first quarter of 1916 a sudden and abnormal rise occurred, and war marriages swelled the totals until they reached "record" heights. Thereafter the increase in marriages continued, but with diminished force,

and by the third quarter of 1916 the number had fallen below the average. Crudely stated, he declared that the war has resulted in 200,000 people being married between August, 1914, and June, 1917, who in the ordinary course would not have married. The marriage rate for 1915 was the highest recorded, 19.4; the previous maximum, 17.9, was in 1853.

With reference to the marriage statistics in belligerent countries, he said that in Hungary the effect of the war had been that more than 600,000 people who in the ordinary course would have married had not done so. In Prussia, Bavaria, Saxony, Hesse, Hamburg and Bremen, six states containing more than 80 per cent. of the German population, the total number of marriages in 1913 was 434,103, and in 1914 the number was 392,053, a decrease of nearly 10 per cent., in spite of a great number of war marriages during the first month of the war. From figures available, in Saxony, compared with the last year of peace, the decrease was about 35 per cent., in Hamburg 24.5 per cent., in Bremen 37.6 per cent., and in Berlin 21.6 per cent., and he presumed that the decrease in the country was greater than in the town.

Comparing the statistics, the president said that the very notable difference was not difficult to account for. In Germany the whole population of military age was mobilized; in England war marriages were stimulated by generous allowances and pensions. On the introduction of compulsory service, larger numbers of men of marriageable age were fighting abroad, and the conditions were beginning to approach those of the Germans, the influence of which could be seen in the birth rate, although the comparison was wholly in favour of this country.

The loss of potential lives to the belligerent countries by the decrease in the numbers of children was, perhaps, the most important effect produced by the war on vital statistics. It was first felt at the end of April, 1915, and it would continue until nine months after the termination of hostilities and demobilization was more or less completed. In England and Wales, in the three years 1911-1913, the decrease in the births amounted to 4.2 per cent. in numbers as compared with 1908-1910, and represented a birth rate of 6.3. In Germany the decrease had been much more rapid of late years; the decline was 5 per cent. in numbers and 9 per cent. in rate, and in Hungary 1.1 and 3.5. From these figures it was apparent that the United Kingdom had suffered far less than had Germany in this vitally important point. The United Kingdom lost by the fall in births over 500,000 potential lives, approximately 10,000 per million of the population. Germany lost in the same period 2,600,000 approximately 40,000 per million. Hungary lost 1,500,000, approximately 40,000

per million. At the outbreak of war, the population of the central empires was about two and a half times as great as that of the United Kingdom; their losses of births had apparently been ten times as great. The poorer classes in this country had never experienced more favourable conditions, but the Germans, if all indications were to be believed, had suffered to such an extent as to affect seriously the general health of the population.

As regards infant mortality, the rate during 1914-1916 had been lower both in the United Kingdom and in Germany than in any previous period of like duration; but the summer mortality in 1917 appeared to have been extraordinarily high in several German cities in spite of the great organized efforts to save infant life, and the German rate all through remained at about 50 per cent. higher than in this country. The rate recorded in the United Kingdom in 1916 was the lowest on record. In speaking of the deaths during the period of the war, Sir Bernard Mallet distinguished between civilians and members of the armed forces. Generally there was a marked rise in civilian deaths in 1915, followed by a fall to below pre-war numbers in 1916. One cause of the decrease was the restrictions in the output of alcoholic liquors.—*Medical News*.

VACCINATION AGAINST SMALL-POX.

THE KIND OF VACCINE TO USE AND HOW TO USE IT.

THE United States Public Health Service in Public Health Reports for November, 1917, advises the following procedure in order to secure the best results from vaccination and to prevent possible complications.

I. THE VACCINE.

The freshest possible vaccine should be obtained. All vaccine packages, pending use, should be kept in a metal box in actual contact with ice.

II. THE VACCINATION.

Vaccination should never be performed by cross scratching or scarification, but by one of the methods described below. If a prompt "take" is very necessary, as in case of direct exposure to small-pox or if the first attempt has been unsuccessful, three or four applications of the virus should be made, but the insertions should be at least an inch apart. Whichever method is used, a control area may be first treated similarly, but without the virus, in order to estimate the amount of pressure necessary for insertion and in order to demonstrate a possible early immune reaction in previously vaccinated individuals.

Preparation.—The skin of the upper arm, in the region of the depression formed by the

insertion of the deltoid muscle, should be thoroughly cleaned with soap and water if not seen to be clean, and in any case with alcohol ether on sterile gauze.

After evaporation of the alcohol or ether, a drop of the virus should be placed on the cleaned skin. To expel the virus from a capillary tube, the tube should be pushed through the small rubber bulb which accompanies it, wiped with alcohol, and one end broken off with sterile gauze; the other end may be broken inside the rubber bulb. The hole in the latter should be closed with the finger as the bulb is compressed to expel the virus.

The under surface of the arm is grasped with the vaccinator's left hand so as to stretch the skin where the virus has been placed. The skin is kept thus stretched throughout the process.

Methods.—(a) The Method of Incision, or Linear Abrasion: By means of a sterilized needle or other suitable instrument, held in the right hand, a scratch, not deep enough to draw blood, is made through the drop of virus, one-quarter inch long and parallel with the humerus. The virus is then gently rubbed in with the side of the needle or other smooth, sterile instrument. Some blood-tinged serum may ooze through the abrasion as the virus is rubbed in, but this should not be sufficient to wash the virus out of the wound.

(b) The Drill Method: A sterile drill, such as is used for von Pirquet cutaneous tuberculin test, shaped like a very small screw-driver with a moderately sharp end not more than 2 mm. wide, is held between the thumb and middle finger, and with a twisting motion and moderately firm pressure, a small circular abrasion, the diameter of the drill is made through the drop of virus; this should draw no blood.

(c) The Multiple puncture Method: A sterile needle is held nearly parallel with the skin, and the point pressed through the drop of virus so as to make about six oblique pricks or shallow punctures, through the epidermis to the cutis, but not deep enough to draw blood. The punctures should be confined to an area not more than one-eighth inch in diameter.

With Methods (a) and (b) it is advisable to expose the arm after vaccination to the open air, but not to direct sunlight, for fifteen minutes before the clothing is allowed to touch it. With Method (c) the virus may be wiped off immediately.

III. THE VACCINATION WOUND.

1. The original vaccination wound should be made as small as possible, and all injury to the vaccinated arm should be guarded against. Any covering which is tight, or more than temporary, tends to macerate the tissues during the "take." This is to be avoided. No shield or other dressing should be applied at the time of vaccination.

The usual bathing and daily washing of the skin may be continued, so long as the crust does not break. The application of moisture to the vaccinated area should not be enough to soften the crust.

If an early reaction of immunity is to be watched for, the patient should report on the first, second, fifth and seventh days after vaccination. Otherwise, the patient should report on the ninth day, or sooner if the vesicle, pustule or crust breaks. Every effort should be made to prevent such rupture. However, should the vesicle, pustule or crust break, and the wound thus become open, daily moist dressings with some active antiseptic, such as mercuric chloride or dilute iodine (one part tincture of iodine in nine parts of water), should be applied. Under no circumstances should any dressing be allowed to remain on a vaccination wound longer than twenty-four hours, and no dressing should be applied so long as the natural protection is intact.

On account of possible fouling by perspiration and to lessen the chance of exposure to street dust, primary vaccination should be performed preferably in cool weather. In order to encourage proper surgical treatment, no charge should be made for the after-care of a vaccination, or for re-vaccination in case the first attempt should prove unsuccessful.

Although apparently trivial, vaccination is an operation which demands skill in performance and care in after-treatment in order to avoid the rare, but serious, complications. For the prevention of these complications, vaccination (a) should be performed with strictly aseptic technic, (b) should cover the smallest possible area for each insertion, and (c) should be treated without any covering which permits maceration.

A child should be vaccinated by the time it has reached the age of 6 months, and the operation should be repeated at about 6 years of age and whenever an epidemic of small-pox is present.

—*Therapeutics.*

HOOKWORM DISEASE.

ON receipt of applications in writing from any registered medical practitioner resident in Bengal, the Sanitary Commissioner, Bengal, will be pleased to supply copies of pamphlets dealing with hookworm disease, its cause, prevention and treatment.

LIEUTENANT-COLONEL D. McCAY, I.M.S., has been appointed Editor, *Indian Medical Gazette*, in place of Lieutenant-Colonel Sir Walter Buchanan, I.M.S., who has retired from the Service.

DR. T. A. HENRY, late Superintendent of the Laboratories at the Imperial Institute, London, has been appointed Director of the Wellcome Research Laboratories, London.

Dr. F. L. Pyman, the former Director of these Laboratories, has accepted the Professorship of Technological Chemistry in the Manchester Municipal College of Technology; and in the University of Manchester.

Reviews.

The Organs of Internal Secretion: Their Diseases and Therapeutic Applications. A Book for General Practitioners. By IVO GEIKIE COBB, M.D., M.R.C.S. Second Edition. London: Messrs. Baillière, Tindall & Cox, 1918.

IN reviewing the first edition of this book we spoke very highly of the clear manner the author had dealt with an abstruse subject, our verdict has been amply confirmed by the demand for a second edition within a year of its first publication. In addition, a Spanish and Italian edition has been necessary to meet the demands of other countries.

The author has revised the text and brought it up to date and an important chapter dealing with the relation of the Internal Secretions to functional Nervous Disease has been added. The large increase in such disorders, accountable to the war, has necessitated such a discussion.

We can thoroughly recommend this book to our readers. It is handy, concise, and full of practical points and supplies the busy practitioner with the necessary information in an easily-grasped form.

Eyes Right: Papers for Teachers and Parents on the Hygiene and Treatment of the Eye. By Dr. J. M. MACPHAIL. Calcutta: Messrs. Butterworth & Co., 1919. Price Re. 1.

DR. MACPHAIL has had to satisfy the demand for his little book by bringing out a second edition.

That the work has proved valuable no one doubts, and, if only teachers in schools would make themselves acquainted with the simple methods recommended, a great deal could be done to prevent and cure many of the contagious inflammatory conditions that affect the eyes in childhood.

The trouble is that these things appear so simple to educated westerners but in India one is fighting against a terrible weight of ignorance. How is one to get at the ignorant father to instruct him how to deal with the simple eye troubles of his children. The only way at present is to hope that knowledge may filter down from the top. If teachers in schools could set a good example and give simple instruction much might be done for the present and more from the coming generation.

Dr. Macphail gives many valuable hints and easy methods of treatment and is to be congratulated on his efforts to prevent the awful waste of eyesight that is going on in India.

tulated on his efforts to prevent the awful waste of eyesight that is going on in India.

Surgical Treatment.—By JAMES P. WARBASSE M.D. In three volumes, with 2,400 Illustrations Volume I, pages 947. Philadelphia and London W. B. Saunders Company.

THE author states in his preface that the book has been written in the interests of the surgical patient; the object being to place in the hands of the surgeons the means for rendering help in every surgical condition under all circumstances. The fact that various treatments are given which may be used "under all circumstances" renders the book particularly useful. Every surgeon knows of cases in which he has been obliged to modify his treatment to meet the surroundings of his patient so as to obtain the best feasible results and the statement probably applies to this country as much as or more than others. The fact that there are differences in the ability of various surgeons is also recognised and the reader of this book can take his choice of methods. The opening chapters describe what may be called the ground work of surgery, asepsis, surgical materials, anæsthesia, etc., and then goes on to wounds, inflammations, surgical fevers and infections; the treatment of syphilis is particularly well described. Further chapters are on blood vessels, fractures and dislocations, operations on bones, joints and their appendages, terminating with the surgery of the nerves. The book is well written, easily read and the descriptions of the various procedures concisely and clearly given; it should prove useful not alone to the beginner, but also as a book of reference to the more expert surgeon. Illustrations and letterpress, as usual with this firm's publications, are excellent.

ANNUAL REPORTS.

REPORT ON THE ADMINISTRATION OF ASSAM, 1917-18.

Nine Civil Assistant Surgeons and nine Sub-Assistant Surgeons were deputed to military duty during the year, and the difficulty of finding qualified substitutes resulted in a further reduction in the number of hospitals and dispensaries from 215 to 210.

The daily average strength in the Tezpur Lunatic Asylum was 341. The accommodation was increased by the construction of a new barrack, and the ventilation of the existing barracks was improved. As a result of these measures and of the careful attention paid to the health of the inmates the mortality rate, which was 14.44 per cent. in 1916, dropped to 5.56, the lowest recorded for any province in India.

Five hundred and sixty-nine patients underwent the anti-rabic treatment during the first year of the working of the Shillong Pasteur Institute. The patients, of whom 50 were Europeans and 519 Indians, came from every district of Assam, from 28 districts of Bengal and from two of Bihar and Orissa. The death-rate from hydrophobia amongst the patients was 0·88 per cent. Useful work was done in the bacteriological and research section of the Institute in connection with cholera, typhoid fever, kala-azar, malaria, cerebro-spinal fever and diphtheria.

The spread of kala-azar to areas in Upper Assam which have hitherto been immune from it, caused much anxiety during the year. Separate regulations, suited to ordinary villages and to tea gardens infected with the disease, were framed at a representative conference which met at Shillong in September 1917 and have been notified under the Epidemic Diseases Act. A detailed survey of the areas affected or likely to be affected was undertaken, and arrangements were made for the construction of an in-door hospital for the treatment of kala-azar patients by Sir Leonard Rogers' method.

The year opened with 215 hospitals and dispensaries and closed with 210, of which 71 were supported by the State, 123 by local bodies and 16 by private persons, missions and railways. The reduction was due to the demand for medical officers for military duty and to the difficulty of replacing them.

The number of patients treated fell from 1,627,949 in 1916 to 1,602,873 in 1917. The percentage of the population obtaining medical relief in the "State public," "local fund" and "private-aided" dispensaries was 21·02 against 21·16 in 1916.

The income at the disposal of dispensaries of these classes was Rs. 5,35,337, of which Rs. 2,01,532 or 37·66 per cent. were contributed by Government. The total expenditure during the year was Rs. 4,05,991 against Rs. 4,47,520 in 1916.

There were 44 lepers in the leper asylum at Sylhet at the beginning of the year. Fifty-three were admitted during the year, one was discharged relieved, 26 were discharged otherwise, 7 absconded and 12 died, leaving 51 at the close of the year. The total expenditure, excluding establishment charges, amounted to Rs. 4,324-7 against Rs. 3,957 in 1916.

In the Kohima leper hospital there were 18 lepers on the 1st January, 1917. Ten were admitted during the year, 1 was discharged cured, 2 died and 3 were discharged otherwise, leaving 22 at the close of the year. Exclusive of establishment charges the total expenditure was Rs. 1,937 against Rs. 1,410 in 1916.

Two different methods of treatment of leprosy were followed at Sylhet, namely, those advocated

by Dr. Heiser of the Philippines and by Lieutenant-Colonel Sir Leonard Rogers, I. M. S. Dr. Heiser's method of treatment was discontinued as it failed to give good results. The results obtained by following Sir Leonard Rogers' method are encouraging, but it is too early to say definitely that a real cure will be effected, or that the improvement obtained will be permanent.

ADMINISTRATION REPORT OF BALUCHISTAN AGENCY, 1917-18.

The remarks, as follows, of the Agent to the Governor-General regarding the medical matters of the Agency are brief. The body of the report, however, shows that good work was done during the year under review, 242,141 cases of disease were treated and over 25,000 vaccinated.

The medical work of the year scarcely calls for comment. For obvious reasons practically no expansion or development was possible, and, save as regards vaccination, the figures for which in Quetta-Pishin show a remarkable increase, the statistics for the period under review differ little from those of 1916-17. With the exception of the small-pox outbreak in Quetta town, there was no serious epidemic. In the death of Lieutenant-Colonel Duke, the late Chief Medical Officer and Residency Surgeon, the province sustained a great loss, for few officers have so endeared themselves to the heart of the people as he did by his courtesy and kindness.

Malaria claimed 79,698 victims and dysentery and digestive diseases over 58,000. Eye diseases are very prevalent, no less than 30,833 persons being treated during the year under review.

Despite all this work there does not appear to be any mention of the names of those to whom credit is due.

Correspondence.

"VEGETABLE AND SCURVY."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—If there are any who still believe that the want of fresh vegetables in the dietary is the cause of scurvy, it would be interesting for them to know that in India thousands of people, at least on this side, take no vegetables for days and days. First because enough vegetables are never obtainable, and secondly it is beyond the means of most to purchase a daily supply of the same. India does not grow enough vegetables to supply the needs of its 25 crores of inhabitants. In order to prove this by statistics, inquiries were made in four villages in this district. Each of these villages has a Local Board Grant-in-aid Dispensary, and one is a Taluka headquarters. That shows they are a fair guide for statistical conclusions.

The following figures speak for themselves :—

Name of village.	Population.	Daily amount of vegetables sold, including Onions, Potatoes, &c.	Vegetable gardens in the village.
1. Jhanore ...	2,479	320 lb.	Nil.
2. Kavi ...	3,070	80 to 160 lb.	2 acres.
3. Vagra ...	1,124	80 lb.	Nil.
4. Ilav ...	1,578	160 lb.	2½ acres.

The price of the cheapest vegetable this year is three quarters to oneanna per pound. This is a year of scarcity, on account of scanty rainfall; which means that vegetables in a normal year can be had in greater abundance during the latter part of the rainy season, and for one or two months more thereafter, but during the rest of the year the supply must always remain short, unless there are vegetable gardens. In most of the villages there are no vegetable gardens; which itself shows that the supply in the summer and early part of the rains even in normal years must be such as to meet the needs of the better class only.

BROACH.

Yours, etc.,
V. W. MARCHANT, L.M.

THE MAYO NATIVE HOSPITAL.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—In the interesting reminiscences of Surgeon-Major N. C. Macnamara, contributed by Colonel Kenneth McLeod, I.M.S. (retd.), to your March issue, there is a reference to the Mayo Native Hospital regarding which a few further details may interest your readers. They are contained in narrative of the foundation of the hospital, printed by Major Macnamara just before he retired, and which is one of the cherished possessions of the hospital. Major Macnamara met with considerable opposition to his proposal to transfer the Native Hospital from Dharamtolla to the river bank (Strand Road), partly from some inhabitants near Dharamtolla but mostly from the Secretariat, and his account of how he carried the day is instructive and sometimes amusing. Colonel McLeod's reference to Major Macnamara's characteristic energy and his commandeering of the site, alludes to the difficulty that arose in obtaining possession of the site sanctioned by the Government of Bengal and the Port Commissioners. At sunrise one morning Major Macnamara appeared on the scene with a number of workmen, supplied by Messrs. Mackintosh, Burn & Co., and before any one could interfere the whole structure of the bathing ghat on the site was pulled down and removed; thus clearing the ground upon which the erection of the hospital was then begun. Lord Northbrook laid the foundation-stone on February 3, 1873. Major Macnamara raised two lakhs for building and a sum of fifty thousand was received from the Mayo Memorial Committee, on condition that it was known as the Mayo Native Hospital. The name has occasionally been objected to in recent times, but some of our Indian Governors prefer it and undoubtedly it has now and then led to the receipt of legacies from those who desired to assist a charity devoted entirely to Indians. Major Macnamara built wisely and well and even to-day the hospital, though capable of improvement as regards marble floors, etc., remains a living witness to the energy and sagacity of one whom the Indian Medical Service and Calcutta will always hold in honour.

Yours, etc.,
F. P. MAYNARD, LT.-COL., I.M.S.,
Surgn.-Supdt., Mayo Native Hospital.

10th March, 1919.

SIR PARDEY LUKIS MEMORIAL SCHOLARSHIP.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—For the information of the numerous subscribers of the Sir Pardey Lukis Memorial Fund, I beg to request the favour of your kindly allowing a little space in your widely circulated journal for the publication of the subjoined proceedings of the Final Meeting of the Memorial Committee held at the Medical College, Calcutta, on the 19th February, 1919, under the presidency of Lt.-Colonel J. T. Calvert, C.I.E., M.B., I.M.S.

Resolution I.—That the fund, amounting to Rs. 4,466 in Government securities and cash as shown in the Abstract Account Sheet, dated the 19th February, 1919, be made over to the Principal, Medical College, Calcutta, by the Joint Hony. Secretaries of the Sir Pardey Lukis Memorial Committee.

Resolution II.—That the interest of the War Bonds and the G. P. Note which will be due on the 14th March next be drawn on due date and this amount, together with the cash in hand, amounting to about Rs. 200, be invested at once.

Resolution III.—That the total annual interest on the whole investment, amounting to about Rs. 240, be applied towards the creation of a scholarship of about Rs. 20 per mensem, tenable for one year, to be annually awarded to the student of the Calcutta Medical College who stands first at the Honours Examination in Medicine at the end of the 5th year. Should the interest on the fund exceed Rs. 240, the excess should be allowed to accumulate until it reaches

the sum of Rs. 100, when it should be invested to the credit of the fund.

Resolution IV.—That the scholarship be named "Sir Pardey Lukis Memorial Scholarship" and the scholar be called "Sir Pardey Lukis Scholar."

Resolution V.—That the Principal, Medical College, Calcutta, be the custodian of the Scholarship Fund and be authorised to invest it, as necessity arises, in Government securities, with a view to secure as far as possible an annual interest of Rs. 240 on the whole investment.

Yours, etc.,
CHUNI LAL BOSE,
Joint Hony. Secretary,
Sir Pardey Lukis Memorial Committee.

CALCUTTA:
7th March, 1919.

"BILLS OF MORTALITY."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—Beyond an occasional comment, usually of a sarcastic nature, anent the large number of deaths attributed to fever, the bills of mortality published from all large important Indian cities excite little interest except with the medical profession and a few zealous *Patres Conscripti*, City Fathers, who are genuinely keen on matters of sanitation and measures for preserving the health of their fellow-citizens. The following extracts, however, from the death returns of Edinburgh in the year 1746 may afford amusement to the general reader and surprise members of the R. A. M. C. and I. M. S. by the extraordinary diseases apparently common in "Auld Reekie" more than a century and a half ago. These mortality rolls were published monthly in the old *Scots Magazine*, a volume of which is in the possession of the writer, and it was only by searching ancient dictionaries that the exact nature of some of the strange complaints responsible for the death of worthy North Britons could be ascertained. "Chincough" figures in every return and seems to have been identical with our whooping-cough, while "tympny"—also a common complaint in those days—is defined with somewhat brutal coarseness as a "flatulent distension of the belly." Inability to perceive a joke doubtless led the compiler of these monthly death statistics to include "Hanged—4" in his return for February 1746. The Jacobite cause was not then quite lost (the Magazine gives a capital, if guarded, account of the battle of Falkirk) and perhaps some stray Highlanders were the four victims thus carried off by hempen fever.

"Iliac" passion was another queer form of sickness with which our ancestors were familiar, if unknown now-a-days, and despite the romantic title was a form of colic. In several of the returns the cause of decease is not given but merely the remark "suddenly." The persons dying must have gone out "phunk," as Archie Moncrie of Drumtochty, said of hard drinkers. To find Scotsmen dying from "lethargy" is certainly unexpected, yet to that sickness—a sort of *vis inertiae*—about half a dozen deaths are attributed. An "imposthume" corresponds, we discovered, with an abscess, but what was meant by blaming "Evil" for a couple of deaths defied our efforts at elucidation. Had a "D" been placed in front of the word it might have been easier to comprehend. There appear to have been varieties of feverish complaints termed, respectively, common fever, scarlet, malignant, spotted, and a quaint disease called "purples." This proved to be what medical practitioners of those times chose to describe as a "petachial" fever, that is one the symptoms of which took the very unpleasant form of purplish spots breaking out on the body of an unfortunate patient. Head complaints were also pretty rife and enjoyed most weird titles, such as "headmonldshot" and "horse-shoehead," both of which concerned the sutures of the brain in the case of very young children. While "grief" carried off three Caledonians, "mortification" claimed a much heavier toll, but by the latter term was probably meant what is now classed as blood-poisoning. "Rising of the lights" has a theatrical ring but must have been a crude way of diagnosing liver disease. "Tissick" for what we know as consumption is modern compared with the causes of death mentioned above, and in every one of the monthly mortality bills a few deaths are simply recorded as "found dead," the canny Scot who prepared the statistics not caring to commit himself to a definite opinion in cases where doubt existed. To die "bed-ridden" must have been a painless mode of exit from a sinful world and decidedly preferable to losing life from "bursten and ruptures," as several poor wretches are shown as having done. Altogether, these ancient mortality bills are curious reading, and we trust the foregoing specimens given may have been found somewhat interesting as examples of how people in Edinburgh met their end in the past and the great change which has occurred in the nomenclature of disease as well as in its treatment.

Yours, etc.,
SHAHJAHANPUR. ARTHUR GORDON

SANTONINE IN CHOLERA INFANTUM.

To The Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—It will be a great boon if you would kindly give space in your esteemed journal for the following note.

There had been a good many cases of cholera infantum in the villages of Jugibil and Chitlia in the months of April and May, 1918, when I was in charge of the Kamalganj Dispensary. Both the villages are situated on a streamlet named Showcherra. The victims were from 8 months to 8 years of age. I used three doses of santonine, $\frac{1}{2}$ to 1 grain, with hydrargyrum cum creta, — $\frac{1}{2}$ to 1 grain, according to age, every four hours, with excellent result. The patients in most cases improved so far as the diarrhoea, vomiting and retention of urine were concerned within 12 hours, in some cases with ejection of some ascaris lumbricoides, and with a mortality of 26 per cent. only. Whey was the only diet throughout the illness. I shall be highly thankful if my professional brethren would make experiments and publish the results in your esteemed journal.

My best thanks to Captain S. C. Chackerbutty, I.M.S., Civil Surgeon, for his kind permission to publish this.

Yours, etc.,

MON MOHAN GHOSH,

Local Board Doctor,

PANCHGAON DISPENSARY :
12th February, 1919.

MASSIVE ANÆSTHESIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I shall be obliged if you would kindly give space to the following few lines in your esteemed journal. I trust they will be of interest to your readers, who may be persuaded to throw some light on the case.

Some days ago a patient was admitted to my ward from the General Hospital, Marseilles. The Base Hospital diagnosis was anæsthesia of the left arm, which was very vague and did not lead to form any helpful opinion. The notes of the case that accompanied the patient only mentioned the corroboration of the subjective signs and that the patient, who was a cook, had, on several occasions, unconsciously burnt his hand. When I examined the case I found there was complete anæsthesia extending from a little above the left elbow joint to the tips of the fingers of the hand in the entirety of the limb. This loss of tactile and painful sensations was also attended by insensibility to heat and cold, as is evident from his burning his hand. There was no loss of motor power nor was there any wasting of the affected part.

One feature of this local unconsciousness (as I am tempted to call it) was its curious distribution involving the whole thickness of the limb, which did not correspond with the course of any special nerve. This point struck me as giving an indication of functional disorder. The man did not say much about the history except that he had had a fit some time ago and that after that he observed that he had lost all sensation in his left arm. I put this case down as Hysteria in the absence of some better nomenclature.

Yours, etc.,

M. FARUQEE,

Sub.-Asst. Surgeon, I. M. D.

CEREBRO-SPINAL MENINGITIS.

To The Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—A rather curious case of cerebro-spinal meningitis came under my observation some time ago while doing duty with the troops on board the transport *Kara-Denix en route* to Egypt.

I have a vivid recollection of the main features of the case, and hoping it would be of interest to your readers I request the favour of your kindly publishing it.

The patient—a R. F. A. Driver, aged 18-19 years—was brought to the ship's hospital one evening. He could not walk, so he was carried there on the arms of a couple of men of his unit. His friends, being questioned, said that the patient had not been feeling well for some time, that at least 24 hours must have elapsed before he was brought there, and that he had passed some motions.

General condition on admission.—The patient looked dull and drowsy and was very apathetic in answering questions. He could not stand on his legs and as the attendants were supporting him he gave an impression of falling backward—his knees being in a state of semi-flexion. He had passed a motion since his arrival in the hospital ward. There was no headache complained of nor was there any manifestation of it.

The temperature was sub-normal.

On examination.—The patient lay on his bed with his legs partially flexed. There was no retraction of the neck or stiffness present. As for the subjective symptoms, the patient did not complain of pain either in the back or anywhere else. All he said was that he did not feel well.

In view of the previous statement it would be needless to say that Kernig's sign was present. In fact the contraction of the flexors of the legs was a most conspicuous phenomenon and should have been the guiding point to me.

But I became so oblivious to it when I first noticed that the patient could not stand on his legs, that I attributed his curious postures to mere weakness (consequent on diarrhoea).

2nd day of observation.—There was no change in the condition of the patient for good or bad. Precisely the same symptoms prevailed as on the evening of admission.

There were two R. A. M. C. officers on the ship with me and their opinion was divided as to calling it C. S. M. One of them said it was a case of cerebro-spinal meningitis and the other had reasons not to share the opinion. I must confess that I was positively on the wrong side.

However, there was evidence enough to warrant a lumbar puncture. This was soon carried out and about an ounce of greenish turbid C. S. F. was drawn. After the lumbar puncture the patient showed distinct improvement, though there was some stiffness of neck noticeable now which was absent before.

The temperature remained sub-normal.

3rd day.—The general condition of the patient continued to improve. The patient exhibited a slight rise of temperature—99° F.

The following day the patient was put ashore at Aden and I lost the opportunity of watching the progress of the case any further. We had no facilities for examining the C. S. F.

Yours, etc.,

M. FARUQEE,

Sub.-Asst. Surgeon, I. M. D.

THERAPEUTIC NOTICES.

APOTHESINE.

APOTHESINE is the hydrochloride of gamma-diethylamino-propyl cinnamate. It occurs in the form of small white crystals having a melting point of 137° C. It is readily soluble in alcohol, slightly soluble in acetone and ether, and very soluble in water. It is quite stable and will keep indefinitely if reasonably protected. The solution in water is neutral to litmus. It is precipitated from solution by alkalis and by the ordinary alkaloidal reagents. If desired, the solution may be sterilized in the usual manner by heating to the boiling point of water. The best results are insured by the use of freshly prepared solutions.

Physiologic tests warrant the statement that Apothesine is as efficient as any other synthetic local anesthetic; indeed, it is more potent than most of them. It is much less toxic than cocaine. *It is not a derivative of cocaine and its use does not induce "habit" formation.* Its toxicity is quite low compared with that of similar anesthetics in general use: compared with cocaine the contrast as to toxicity is much more striking.

Apothesine is suitable for use in any surgical procedure in which a local anesthetic is indicated. The strength of the solution, in water or physiologic salt solution, and the quantity to be injected, should be determined by circumstances and the nature of the case. The solutions generally employed range in strength from 0.5 to 3 per cent., but the strength of the solution and the method of application can best be decided by remembering that Apothesine is equal in activity to the popular local anesthetics. While it is somewhat less toxic than any of them. In the production of local anesthesia, the solution of Apothesine is injected beneath the cuticle or mucous membrane after the well-known method of Schleich. Mucous surfaces may be anesthetized by the application of compresses saturated with the solution, making due allowance for the fact that Apothesine, like all synthetic anesthetics, is absorbed more slowly than cocaine.

It is admitted that the best-known local anesthetic, cocaine, is capable of producing profound toxic symptoms, and its use without restraint leads ultimately to the formation of the "cocaine habit." Hence the importance of the discovery of Apothesine, which produces such thorough anesthesia that even major operations are done under its influence. Physiologic tests upon animals show its low toxicity, which is about the same as that of the best synthetic anesthetics, and much less than that of cocaine. It causes practically no irritation of the tissues at the site of injection.

Before Apothesine was offered to the medical profession it was subjected to series of practical tests for a period of

eighteen months by a large number of surgeons and dentists (over one hundred) in various parts of the country. From the reports received and tabulated it was found that Apothesine had been used as the anesthetic in 1,009 cases. It is worthy of note that among them were 63 tonsilectomies, 6 turbinectomies, and several resections (submucous) of the septum.—Messrs. Parke Davis & Co.

Service Notes.

STATION HOSPITALS FOR INDIAN TROOPS.

THE following Army Instruction (India), dated November 19th, 1918, has been issued by the Government of India, Army Department):

INTRODUCTION OF STATION HOSPITALS FOR INDIAN TROOPS AND FOLLOWERS.

It has been decided that, with effect from the 1st December, 1918, station hospitals for Indian troops and followers will be established in place of existing regimental and followers' hospitals.

2. Station hospitals for British troops will thereafter be known as "British station hospital" and those for Indian troops and followers as "Indian station hospitals."

3. The system of command and administration in Indian station hospitals will be similar to that in hospitals for British troops.

4. All existing hospital arrangements for Indian troops and for regimental and departmental followers will be brought under one administrative control which will be exercised by the officer commanding the Indian station hospital. Officers of the Indian Medical Service, sub-assistant surgeons and subordinate hospital establishments will no longer be attached to Indian regimental units, but will form part of the establishment of Indian station hospitals.

5. Hospitals will be classified according to the total strength of Indian troops and followers forming the garrison as follows:

- 1st class Indian station hospital, where the strength of garrison (as above) is 3,000 and over.
- 2nd class Indian station hospital, where the strength of garrison (as above) is 2,000 and over.
- 3rd class Indian station hospital, where the strength of garrison (as above) is 1,000 and over.
- 4th class Indian station hospital, where the strength of garrison (as above) is 500 and over.
- 5th class Indian station hospital, where the strength of garrison (as above) is under 500.

The present classification of Indian station hospitals, which is only temporary, is shown in appendix "A" to this instruction. The permanent classification of hospitals will be carried out on the restoration of normal conditions.

6. Where more than one regimental, or combined hospital, already exists in a station, the local authorities will decide, and report to the Director of Medical Services in India for the information of the Government of India, which will be the Indian station hospital. The remaining outlying hospitals, which it is necessary to retain, will be designated and administered as section hospitals of the station hospital. The officer commanding station hospital will be in command of, and administer, all such section hospitals. Section hospitals will be supplied with equipment, medical stores and stationery from the station hospital.

7. For the period of the war, and until further instructions are issued, the Director, Medical Services in India, will appoint officers to command all first class Indian station hospitals and the hospitals at the following stations: Bakloh, Dharmasala, Almora, Shillong, Maymyo, Mandalay. Commanding officers of other hospitals will be appointed by the General Officer Commanding, Command or Independent Division, who will also appoint officers as second in command of all 1st and 2nd class station hospitals.

8. The rules governing the pay and allowances of officers of the Indian Medical Service are laid down in appendix "B" to this instruction.

9. Deputy and Assistant Directors, Medical Services, Divisions and Independent Brigades, will appoint sub-assistant surgeons to the subcharge of all Indian station hospitals.

Revised rates of subcharge allowances for sub-assistant surgeons will be announced hereafter.

10. Ward orderlies will be attached to regimental units for purposes of pay, clothing and rations, as at present. Details as regards the appointment, pay, and promotion of ward orderlies are given in appendix "C" to this instruction.

11. Orders will be issued shortly regarding the formation of a new corps to be designated the Indian Hospital Corps. This corps will combine, in one organization, the Army Bearer Corps, the Army Hospital Corps and the subordinate personnel of Indian station hospitals.

12. Temporary hospital writers and storekeepers will be engaged on the scales laid down in appendix "D" in which the rates of pay of storekeepers are given. These scales are in supersession of those laid down in Army Instruction (India) No. 1231 of 1918. Writers should be paid at the lowest rates on which they can be obtained. Both classes must sign the agreement on I. A. F. Z 2255, the words "on field service or" in line 12 of the agreement, and "either" and "or out of" in line 13, being deleted in ink and initialled by the officer commanding hospital.

13. All existing regimental hospital followers and menial personnel of followers' hospitals, will, if they are willing, be temporarily transferred, together with their documents, to the Indian station hospital at the station in which they are serving. If not willing to be thus transferred, they will be discharged unless they are pensionable servants, when each individual case will be reported to the Director, Medical Services in India, for orders. The scale on which followers will be employed is laid down in appendix "E." If, in order to complete this scale, it should be necessary to recruit personnel in addition to those transferred from regimental establishments, these should be engaged temporarily at the lowest rates of pay on which they can be obtained. The scale of clothing for all hospital followers (including those now serving) is given in appendix "E."

14. The instructions contained in Army Regulations, India, Volume VI, and Standing Orders for the Military Medical Services, regarding the duties of officers of the Royal Army Medical Corps and assistant surgeons will be generally applicable to officers of the Indian Medical Service and sub-assistant surgeons.

Particular attention must be paid to the detailing of officers and sub-assistant surgeons for medical and sanitary duties, outside hospitals, in connexion with the various units in each station, and for orderly duty.

15. Postage labels will be supplied to officers commanding Indian station hospitals by the Divisional or Brigade Deputy or Assistant Director, Medical Services, in the manner at present in force in the case of British station hospitals. Any funds required will be arranged for by the General Officer Commanding concerned in consultation with the Controller of Military Accounts.

16. Officers commanding Indian station hospitals will exercise the same financial powers as Senior Medical Officers, Indian Medical Service [Army Regulations, India, Volume III, paragraph 6 (vii)].

17. The allotments at present made by the Deputy and Assistant Directors, Medical Services, to Senior Medical Officers, Indian Medical Service, to meet contingencies, and for the purchase of articles of local supply, will, in future, be made to officers commanding Indian station hospitals.

18. The pay of officers of the Indian Medical Service, sub-assistant surgeons and hospital establishments will be drawn in accordance with the rules laid down in "Instructions, Staff" for drawing the pay of officers of the Royal Army Medical Corps, assistant surgeons and men of the Army Hospital Corps.

19. Pending the provision of pack stores in Indian station hospitals, Indian soldiers and followers, when admitted to hospital, will have with them only their chevrons, boots, lotahs, and the necessary cleaning materials. All other articles of clothing and equipment will, on the day on which a man is admitted to hospital, be removed and retained under regimental arrangements.

The officer commanding Indian station hospital will furnish the officer commanding unit with the names of all men who are to be discharged from hospital one day prior to their discharge. The officer commanding unit will return the men's clothing to hospital on the morning of the day of discharge.

20. Pending further orders the most suitable arrangements must be made for carrying on the station hospital system in existing permanent or temporary hospital buildings expanded by the provision of such temporary buildings as may be sanctioned on representations made to the Director, Medical Services in India.

21. Indian station hospitals will be dieted institutions, the scales of diet being as authorized in Army Instruction (India) No. 1277 of 1918. The necessary additional furniture and equipment have been sanctioned on a provisional basis in Army Instruction (India) No. 1231 of 1918. Pending the issue of revised scales of medical and surgical equipment, the equipment at present allowed will be continued in use.

22. The necessary amendments to regulations will be issued in due course.

23. Separate orders will be issued later in regard to the incidence of the extra expenditure entailed by these orders and the source from which it should be met.

A. H. BINGLEY, Major-General,
Secretary to the Government of India.

[5041 (D. M. S.).]

D.
Appendix "A" shows the classification of Indian station hospitals. There are 64 in the first class, 13 in the second class, 18 in the third class, 19 in the fourth class, and 31 in the fifth class.

Appendix "B" is as follows:

Pay and Allowances of Officers of the Indian Medical Service.

With effect from the 1st December, 1918, the grade pay of officers of the Indian Medical Service in military employment (with the exception of those holding appointments carrying staff pay or consolidated pay, or those for which special rates of pay have been authorized) will be as follows:

	Rs. per mensem.
Lieutenant-Colonel specially selected for increased pay	1,250
Lieutenant-Colonel	1,100
Major, after 3 years' service as Major	825
Major	750
Captain, after 10 years' total service	700
" " 7 " "	650
" " 5 " "	600
Captain	550
Lieutenant... ..	450

Separate orders will be issued in regard to the emoluments of temporary officers of the Indian Medical Service under the scheme.

2. The above rates of pay represent the total remuneration for duties which officers of the Indian Medical Service (other than those holding appointments which carry staff or consolidated pay or for which special rates of pay have been authorized) may be called on to perform.

The following are also exceptions to this rule:

(a) the extra allowances included in Army Regulations, India, Volume I, paragraph 11 (a), except that authorized for medical charge of the Cavalry of the Corps of Guides which will be abolished; (b) the specialist allowance authorized in Army Regulations, India, Volume I, paragraph 155 (d) (iv); (c) the charge allowances referred to in paragraph 5 of this appendix.

3. The allowances for the additional and temporary medical charge of troops and followers, admissible to officers of the Royal Army Medical Corps, and Indian Medical Service, under Army Regulations, India, Volume I, paragraphs 11 (b), (c) and (d) and 117, and also all similar charge allowances for labour corps, etc., will be abolished.

4. The horse allowance at present admissible to officers of the Indian Medical Service in medical charge of Indian cavalry regiments (Army Regulations, India, Volume I, paragraph 264) will be abolished.

5. Charge allowance for officers commanding Indian station hospitals and second-in-command allowance for officers appointed second-in-command of first and second class Indian station hospitals, will be admissible at the following rates in addition to the rates of grade pay shown in paragraph 1 above:

(a) Charge Allowance.

	Rs. per mensem.
1st class hospitals	240
2nd " "	180
3rd " "	120
4th and 5th class hospitals	Nil

(b) Second-in-command Allowance.

1st class hospitals	120
2nd " "	90

6. Officers, except those holding appointments which carry staff or consolidated pay, will, while on general leave in India, draw grade pay according to the scale given in paragraph 1 of this appendix.

7. The rates of pay and the rules governing the pay (including the pay while on general leave in India) of officers holding appointments which carry staff pay or consolidated pay will remain as at present.

8. If under the new arrangements, the emoluments of any officer, now serving, fall below the present consolidated pay of an officer of his seniority in charge of a regiment (Army Regulations, India, Volume I, paragraph 11), the case should be submitted for the orders of the Government of India. The term emoluments as used here, does not include the

specialist allowance admissible under Army Regulations, India, Volume I, paragraph 155 (d) (iv).

Appendix "C" relates to the appointment, pay, and promotion of ward orderlies: it allows their employment up to eight men per 100 beds, and they will be chiefly pensioned and discharged soldiers. The pay will be that admissible under existing regulations, but there will be also nursing payment to ward orderlies certified to be proficient in nursing duties, at the rate of 2 rupees a month after one year's service, 4 rupees after five years, and 5 rupees after seven years' service.

Appendix "D" lays down the scale of temporary hospital writers and hospital storekeepers authorized for Indian station hospitals.

Appendix "E" lays down the scale of hospital followers and their clothing.

OBITUARY.

LIEUTENANT W. M. CROMBIE, I.M.S.

Lieutenant William Maurice Crombie, Indian Medical Service, died at the Albert Docks Hospital, London, from influenza following illness contracted at Bagdad, on February 17th. He was the eldest and only surviving son of the late Dr. J. Crombie of Sidcup, Kent, was educated at St. Thomas's Hospital, and graduated M.B. and B.S. (Lond.), in 1916, also taking the diplomas of M.R.C.S. and L.R.C.P. (Lond.), in that year. After acting as Senior Obstetric House Physician at St. Thomas's, he took a temporary commission as Lieutenant in the R.A.M.C. on May 22nd, 1916. On 23rd January, 1917, he was appointed to be a permanent Lieutenant in the I.M.S., his commission subsequently being antedated to 22nd May, 1916, and after a year's service to a temporary Captaincy.

INDIAN MEDICAL SERVICE PROMOTION.

IN view of the special conditions under which promotion has been made in certain ranks of the Royal Army Medical Corps during the present war, the Secretary of State for India in Council, in consultation with the Army Council, has adopted the following special measures in regard to the promotion of officers of the Indian Medical Service:

Lieutenants of the Indian Medical Service appointed up to 31st December, 1916, will be promoted to Captain, with effect from the completion of one year's service for promotion. For officers appointed thereafter the usual period of service for promotion (three years from date of first commission) will again come into force. Previous military service rendered after 16th July, 1915 (the date of first commission of officers appointed at the last competitive examination for the Indian Medical Service), as a medical or combatant officer, or in a post usually filled by an officer, will count towards promotion as already announced.

Special promotion under the measure now announced will not be given from an earlier date than 1st September, 1915, and will not carry pay and allowances from an earlier date than 1st September, 1916. Such promotions dating between 1st September, 1915, and 1st September, 1916, though not carrying pay, will be effective for purposes of wound, injury, and family pensions or gratuities.

The Secretary of State for India in Council has also approved the antedating of the promotion of certain Captains of the Indian Medical Service with the view of securing for them a relative equality in seniority with that of corresponding officers of the Royal Army Medical Corps whose promotion was specially accelerated by war conditions. These antedates will carry pay.

Promotion in each individual case will be subject to the officer being recommended as fit for promotion.

On the conclusion of the war officers will not be eligible for promotion to higher substantive rank until their total period of service for promotion is equal to that which would have been required if the special measures herein detailed had not been adopted.

Officers are not entitled to assume higher rank on completing the above-mentioned periods of service until their promotion has been notified either in Expeditionary Force Orders, the *Gazette of India*, or the *London Gazette*.

Antedates of rank and retrospective promotions due under the measure will now be gazetted as soon as possible, but some interval must necessarily elapse in those cases in which recommendations as to fitness for promotion have to be obtained.

Retrospective adjustments of pay becoming due in consequence of these promotions will be made as soon as practicable after the appearance of the *Gazette* notification of promotion.

The Secretary of State for India in Council has also decided that, with retrospective effect from the beginning of the war, acting rank for officers serving in the field shall be granted in the Indian Medical Service to the same extent generally as obtains in the Royal Army Medical Corps.

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SERVICE MEMBERS OF PARLIAMENT.

THE Army Council has made the following rule with regard to officers who may be elected members of Parliament :—
Regular officers on the active list will either be seconded or placed on half-pay from the date of their election to Parliament; those in the Reserve of Officers and on the retired list will revert to unemployment. Officers in the Special Reserve will be demobilized; those in the Territorial Force will be demobilized (officers at present in the Territorial Force Reserve will remain therein), and those in the New Army will relinquish their commissions on election to Parliament.

HONOURS.

THE King has been graciously pleased to make the following appointments to the Most Eminent Order of the Indian Empire for services in connection with the military operations in East Africa :—

To be Additional Companion of the Most Eminent Order.

Lieutenant-Colonel (temporary Colonel) William Wellesley Clemesha, Indian Medical Service.

To be an Officer of the Military Division of the Most Excellent Order of the British Empire.

Captain George McGregor Millar, M.D., Indian Medical Service.

Awarded the Distinguished Conduct Medal.

Fourth class Assistant Surgeon D. M. MacKay, Indian Subordinate Medical Department.

Awarded the Meritorious Service Medal.

Third class Assistant Surgeon P. W. Tobin, Indian Subordinate Medical Department.

THE King has been graciously pleased to give directions for the following appointments to the Most Distinguished Order of Saint Michael and Saint George, for services rendered in connection with military operations in East Africa. Dated 3rd June, 1918 :—

To be Additional Members of the Third Class, or Companions of the said Most Distinguished Order.

Lieutenant-Colonel Patrick Wilkins O'Gorman, Indian Medical Service.

His Majesty the King has been graciously pleased to approve of the undermentioned rewards for Distinguished Service in connection with military operations in East Africa. Dated 3rd June, 1918 :—

Awarded the Distinguished Service Order.

Major Robert Siggins Kennedy, M.C., M.B., Indian Medical Service.

Awarded the O. B. E.

Captain David Livingstone Graham, M.B., I.M.S.
Temporary Lieutenant Kaikobad Rustonyf Madan, I.M.S.

Awarded the D. S. O.

Temporary Lieutenant Burjorji H. Kamakaka, I.M.S.

To be Honorary Colonel.

Lieutenant-Colonel W. H. W. Elliot, D.S.O., M.B., I.M.S. (retired).

Awarded the Military Cross.

Temporary Lieutenant Ratenshaw Nariman Kapadia, Indian Medical Service (Mesopotamia).

For conspicuous gallantry and devotion to duty. Exposed to a heavy rifle fire, he continued throughout the action to collect and dress the wounded, who were much scattered, thereby saving many lives.

Lieutenant Bawa Harkishan Singh, Indian Medical Service (Mesopotamia).

For conspicuous gallantry and devotion to duty and coolness under fire when in charge of the dressing station of the ambulance. The dressing station came under heavy fire at night and the situation was critical for a time. He, however, collected the wounded and brought them in. He also showed great coolness and initiative when the ambulance was bombed by aeroplanes during and after the attack.

Awarded a Bar to Military Cross.

Lieutenant William Peat Hogg, M.C., Indian Medical Service (Mesopotamia).

For conspicuous gallantry and devotion to duty. When his aid post was heavily shelled he collected all his casualties with great coolness and promptitude, and conducted them to a new post. He has previously done similar fine work in action.

(M. C. gazetted 7th February, 1918.)

COLONEL J. CARVIE, M.B., I.M.S., Assistant Director, Medical Services, Allahabad and Fyzabad Brigades, is appointed to be Inspector-General of Civil Hospitals and Prisons, Assam, substantively *pro tempore* with effect from the date on which he assumes charge of his duties.

THE services of Colonel H. E. Banatvala, C.S.I., K.H.S., I.M.S., Inspector-General of Civil Hospitals and Prisons, Assam, are placed temporarily at the disposal of the Army Department with effect from the date on which he is relieved of his present duties.

Medical Corps.

Subject to His Majesty's approval, the undermentioned are granted temporary commissions, with effect from the dates specified :—

To be Lieutenant-Colonel.

Thomas Franklin Pedley, dated 1st April, 1917.

To be Captains.

Ernest Frederic Neve, dated 1st April, 1917.

Cecil Henry Elmes, dated 26th November, 1917.

To be Lieutenant.

Allan Douglas Cameron, dated 1st April, 1917.

LIEUTENANT-COLONEL CHARLES TILSON HUDSON, C.M.G., Bombay, is permitted to retire from the service, subject to His Majesty's approval; with effect from the 10th December, 1918.

LIEUTENANT-COLONEL H. BOULTON to be acting Colonel under the provisions of Army Instruction, India, No. 62 of 1918, while holding the appointment of Assistant Director, Medical Services, Line of Communications, East Persia, with effect from the 14th October, 1918.

WITH reference to Army Department notification No. 843, dated the 26th April, 1918, Major Duncan Macdonald Cochrane Church, M.B., I.M.S., will take seniority in his present rank from the 1st February, 1918, next below Major Henry Stewart Hutchison, M.B., I.M.S., and next above Major Robert George Gibbon Croly, M.B., I.M.S., his previous forfeited service having been restored for good service in the field.

LIEUTENANT-COLONEL A. L. C. MCCORMICK, C.I.E., R.E., on return to duty assumed charge of the appointment of Mint Master, Calcutta, on the 27th February, 1919.

LIEUTENANT-COLONEL J. J. BOURKE, I.M.S., Officiating Mint Master, Calcutta, is granted privilege leave for 3 months with effect from the 27th February, 1919, combined with furlough up to the 31st March, 1920.

IN the Home Department notification No. 1464-C., dated the 25th February, 1919, regarding the appointment of Colonel J. Garvie, M.B., I.M.S., as Inspector-General of Civil Hospitals and Prisons, Assam, substantively *pro tempore*, for the word "Carvie" read "Garvie."

IN supersession of the Home Department notification No. 637-C., dated the 24th January, 1919, Lieutenant-Colonel Sir James Roberts, Kt., C.I.E., M.B., F.R.C.S., I.M.S., Civil Surgeon, Simla (West), was granted privilege leave from the 16th December, 1918, to the 13th January, 1919.

THE services of Major A. W. Overbeck-Wright, M.D., I.M.S., are replaced at the disposal of the Government of India.

THE following officers were in charge of the current duties of the office of the Deputy Sanitary Commissioner, Gujarat Registration District, for the periods mentioned against their names *vice* Mr. J. D. Munsiff on leave :—

Lieutenant-Colonel H. Bennett, M.B., I.M.S.—3rd May, 1918, to 19th May, 1918; 20th June, 1918, to 31st August, 1918.

Assistant Surgeon R. K. Dadachanji, L.M.S.—20th May, 1918, to 19th June, 1918.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major W. O'S. Murphy, M.B., B.Ch. (R.U.I.), D.P.H. (Ire.), I.M.S., to act as Sanitary Commissioner for the Government of Bombay, *vice* Lieutenant-Colonel F. G. H. Hutchinson, M.B., C.M. (Edin.), D.P.H., D.T.M. and H. (Cantab.), I.M.S., proceeding on deputation, pending further orders.

IN exercise of the power conferred by section 10 of the Indian Universities Act, 1904 (VIII of 1904), His Honour the Chancellor of the Allahabad University is pleased to nominate the following gentleman to be an ordinary fellow of the said University:—

Lieutenant-Colonel A. W. R. Cochrane, M.B., F.R.C.S., I.M.S., Professor, King George's Medical College, Lucknow.

MAJOR E. J. C. McDONALD, I.M.S., whose services have been replaced at the disposal of the Assam Administration, is appointed to be Officiating Civil Surgeon, North-East Frontier, with effect from the 23rd February, 1919.

LIEUTENANT-COLONEL CHARLES TILSON HUDSON, C.M.G., I.M.S., Bombay, is permitted to retire from the service, subject to His Majesty's approval; with effect from the 10th December, 1918.

LIEUTENANT-COLONEL W. GLEN LISTON, C.I.E., M.D., D.P.H., I.M.S., Director, Bombay Bacteriological Laboratory, is granted, with effect from the 8th March, 1919, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to six months.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major J. C. G. Kunhardt, I.M.S., to act as Director, Bombay Bacteriological Laboratory, during the absence on leave of Lieutenant-Colonel W. Glen Liston, C.I.E., M.D., D.P.H., I.M.S., pending further orders.

THE following officers of the Indian Medical Service are mentioned in dispatches for services in East Africa:—

Capt. W. D. Keyworth, M.D.; Capt. G. McG. Millar, M.B.; Capt. W. J. Simpson, M.B.; and Lt.-Col. R. F. Standage.

INDIAN SUBORDINATE MEDICAL DEPARTMENT.

Assistant Surgeon Branch.

Fourth class Assistant Surgeon A. L. G. Allen; and Third class Assistant Surgeon W. S. Martin.

Sub-Assistant Surgeon Branch.

First class Sub-Assistant Surgeon R. S. Bell; and First class Sub-Assistant Surgeon Mohamed Ilyasin.

MAJOR W. V. COPINGER, D.S.O., M.D., F.R.C.S.I., I.M.S., is appointed to be Professor of Ophthalmic Surgery, Medical College, Calcutta, and Ophthalmic Surgeon to the Medical College Hospital with effect from the date on which he assumes charge of his duties.

THE services of Lieutenant-Colonel C. H. L. Meyer, I.M.S. (retired), are replaced at the disposal of the Government of Bombay with effect from the date on which he is relieved of his military duties.

THE following promotions are made, subject to His Majesty's approval:—

Captains to be Majors.

William Percival Gould Williams, M.B., Siavax Byramjee Mehta, F.R.C.S.E., Gilbert Holroyd, M.B., Pheroze Kharsedji Tarapore, Dwarkanath Dharmaji Kamat, Sites Chander Chuckerbutty, Alexander Frederick Babonau, M.B., 2nd February 1919; and Joseph Frain James, M.B., 7th March 1919.

WITH reference to Army Department Notification No. 547, dated the 14th March, 1919, Major Joseph Frain James, M.B., Indian Medical Service, will take seniority in his present rank from the 1st September, 1918, next below Major Kanwar Shumshere Singh, Indian Medical Service, and next above Major Andrew Smith Leslie, M.B., Indian Medical Service, his previous forfeited service having been restored for good service in the field.

With reference to Army Department Notification No. 2165, dated the 20th September, 1918, Major Edmund Brodie Munro, M.B., Indian Medical Service, will take seniority in his present rank from the 2nd August, 1918, next below Major David Livingstone Graham, M.B., F.R.C.S.E., Indian Medical Service, and next above Major Roger Brighthouse Nicholson, M.C., Indian Medical Service, his previous forfeited service having been restored for good service in the field.

THE promotion to present rank of the following Majors is antedated as shown, subject to His Majesty's approval:—

Hugh Basil Drake, Ernest Charles Hodgson, D.S.O., William Sim McGillivray, M.D., William Gillitt, C.I.E., M.D., (Temporary Lieutenant-Colonel), Charles Harrison Barber, M.B., William Tarr, M.D., F.R.C.S.E., Hugh Watts, M.B., Ivor Davenport Jones, M.D. (Acting Lieutenant-Colonel), Walter Taylor Finlayson, D.S.O., William Thomas McCowen, Hugh Ellis Stanger-Leathes, Edmund Arthur Roberts, D.S.O., Michael Joseph Quirke, M.B., John Morgan Holmes, M.B., and Maurice Forbes White, M.B., 30th July, 1915, and 1st July, 1915; Terence Francis Owens, George Francis Innes Harkness (retired), Alexander William Montgomery Harvey, M.B. (Brevet Lieutenant-Colonel), 31st August, 1915, William Frederick Brayne, M.B., Merwan Sorab Irani, Seymour Whitworth Jones, John Anderson, M.B. (Acting Lieutenant-Colonel), and Geoffrey Gratrix Hirst, 30th January, 1916, and 1st July Horace Sidney Matson, M.D., Francis Hume Stewart, M.B., Alfred Henry Proctor, D.S.O., M.D., Robert Tait Wells, M.B., Ian Macpherson Macrae, M.D. (Acting Lieutenant-Colonel), Charles Cecil Connock Shaw, M.D., James William Herbert Babington, M.D., Alexander Spalding Mackie Peebles, M.D., and Francis Broughton Shettle, 1st March 1916, 1st September, 1915; Arthur Francis Hamilton, M.B., F.R.C.S., Arthur Anderson McNeight, M.B., Hugh Clive Buckley, F.R.C.S. F.R.C.S.E., Mathew Robert Cecil-MacWatters, M.B., F.R.C.S. William Haywood Hamilton, D.S.O. (Brevet Lieutenant-Colonel), John Cunningham, M.D., Herman Falk, M.B., 1st August, 1916, and 15th October, 1915; Alexander Cameron, M.B., 1st September, 1916 and 15th October, 1915; Arthur Denham White, M.B., Norman Methven Wilson, John Stevenson O'Neill, M.C., M.B., William Sewart Nealer, 1st February 1917, and 15th October, 1915; Carl Henry Reinhold, M.C., F.R.C.S.E., William Dundas Wright, M.B., Vernon Northwood Whitmore, and William Jackson Powell, M.B., 1st March, 1917 and 15th November, 1915; Cadwallader Edwards Palmer, M.B., Broderick Edward Middleton Newland, Lewis Albert Hodgkinson Lack, M.B., Edgar John Cecil McDonald, John Francis Boyd, Narendra Singh Sodhi, M.C., William Cowan Gray, M.B., 1st September, 1917 and 15th November, 1915.

INDIAN MEDICAL SERVICE.

THE following promotions are made, subject to His Majesty's approval:—

Majors to be Lieutenant-Colonels: George Patrick Thomson Groube; Edward David Wilson Greig, C.I.E., M.D.; William Ernest McKechnie, M.B.; William Frederick Harvey, M.B.; William Charles Hughan Forster, M.B.; John Johnson Urwin, M.B., F.R.C.S.; David McCay, M.D.; Arthur Brownfield Fry, D.S.O., M.D.; Edward Cecil Gordon Maddock, M.D., F.R.C.S.E.; William Henry Dickinson, M.B.; Arthur William Tuke, F.R.C.S.I.; and George Herbert Stewart, M.B., dated 28th January, 1919.

WITH reference to Army Department Notification No. 787, dated the 23rd September, 1910, Captain William Edward Rees Williams, M.B., I.M.S., will take seniority in his present rank from the 2nd February, 1910, next below Captain Sites Chunder Chuckerbutty, I.M.S., and next above Captain (temporary Major) Alexander Frederick Babonau, M.B., I.M.S., his previous forfeited service having been restored for good service in the field.

MAJOR E. BISSET, I.M.S., on reversion from military duty to be deputy sanitary commissioner, III range.

SUBJECT to His Majesty's approval, temporary Captain Vinayak Mahadeo Phatak is permitted to resign his commission, with effect from the 1st December, 1918.

SUBJECT to His Majesty's approval, honorary temporary Captain Phiroz Cooverji Bharucha is permitted to resign the service, with effect from the 16th December, 1918.

CAPTAIN E. H. V. HODGE, Indian Medical Service, is granted, subject to His Majesty's approval, the temporary rank of Major while holding the appointment of Deputy Assistant Director, Medical Services, Army Headquarters, dated 20th June, 1918.

WITH reference to Army Department Notification No. 763, dated the 7th July, 1916, Captain Harry Slater Cormack, M.C., F.R.C.S.E., I.M.S., will take seniority in his present

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rank from the 28th January, 1914, next below Captain Sidney Milverton Hepworth, M.B., I.M.S., and next above Captain Jyoti Lal Sen, M.C., M.D., I.M.S., his previous forfeited service having been restored for good service in the field.

LIEUTENANT-COLONEL P. ST. C. MORE, I.M.S., made over charge of the duties of Superintendent of the District Jail at Rawalpindi to Lieutenant-Colonel A. W. T. Buist, I.M.S., on the forenoon of the 27th January, 1919.

SUBJECT to His Majesty's approval, the Hon'ble Major-General Robert William Steele Lyons, M.D., K.H.P., is permitted to retire from the service, with effect from the 11th January, 1919.

SUBJECT to His Majesty's approval, Colonel Thomas Edward Dyson, M.B., I.M.S., Bombay, is permitted to retire from the service, with effect from the 10th January, 1919.

MAJOR H. M. MACKENZIE, I.M.S., Professor of Pathology, King Edward Medical College, Lahore, sub *pro tem.*, is appointed temporarily to be Deputy Sanitary Commissioner, Punjab, in addition to his own duties, with effect from the afternoon of the 16th August, 1918.

LIEUTENANT-COLONEL C. H. BOWLE-EVANS, C.M.G., M.B., Indian Medical Service, to be temporary Colonel whilst specially employed as an Assistant Director of Medical Service, 7th June, 1918.

His Excellency the Governor of Bombay in Council is pleased to appoint Major W. O'S. Murphy, M.B., B.Ch. (R.U.I.), D.P.H. (Ire.), I.M.S., on reversion from military on to be duty, special duty, under the Sanitary Commissioner for the Government of Bombay, pending further orders.

SUBJECT to His Majesty's approval, the services of temporary Captain Aaron Joseph are dispensed with on account of ill-health, with effect from the 6th January, 1919.

IN continuation of Government Notification No. 8572, dated the 6th December, 1918, Dr. R. W. Fisher, M.B., B.Ch., D.P.H. (R.U.I.), Director, Vaccine Institute, Belgaum, has been granted an extension of furlough on medical certificate for three months, with effect from the 1st January, 1919.

SUBJECT to His Majesty's approval, Lieutenant-Colonel John Walter Forbes Rait, M.B., has been permitted by the Right Hon'ble the Secretary of State for India to retire from the service on account of ill-health, with effect from the 24th January, 1919.

SUBJECT to His Majesty's approval, Major William Leigh Trafford, M.B., has been transferred by the Right Hon'ble the Secretary of State for India to the Half-Pay List, with effect from the 18th October, 1918.

THE following promotion is made, subject to His Majesty's approval, with effect from the date specified:—

To be Major-General: Colonel William Ernest Jennings, M.D., vice Major-General R. W. S. Lyons, M.D., K.H.P., retired, with effect from the 11th January, 1919.

WITH reference to Army Department Notification No. 1493, dated the 5th July, 1918, Major James Smalley, Indian Medical Service, will take seniority in his present rank from the 1st March, 1918, next below Major Francis William Cragg, M.D., Indian Medical Service, and next above Major George McGregor Millar, M.B., Indian Medical Service, his previous forfeited service having been restored for good service in the field.

THE following promotion is made, subject to His Majesty's approval:—

Captain to be Major: William Percival Gould Williams, M.B., dated the 2nd February, 1919.

THE promotion to present rank of the following Majors is antedated as shown subject to His Majesty's approval:—

Ian Macpherson Macrae, M.B. (Acting Lieut.-Col.), from 1st March, 1916, to 1st September, 1915.

Hugh Clive Buckley, M.D., F.R.C.S.E., and Mathew Robert Cecil MacWatters, M.B., F.R.C.S., from 1st August, 1916, to 15th October, 1915.

Alexander Cameron, M.B., from 1st September, 1916, to 15th October, 1915.

John Stevenson O'Neill, M.C., M.B., from 1st February, 1917, to 15th October, 1915.

Carl Henry Reinhold, M.C., F.R.C.S.E., and William Dundas Wright, M.B., from 1st March, 1917, to 15th November, 1915.

Cadwallader Edwards Palmer, M.B.; Broderick Edward Middleton Newland, and John Francis Boyd, from 1st September, 1917, to 15th November, 1915.

ON relief by Assistant Surgeon Naoroji Hormusji Bharucha, L.M. & S., Honorary Major M. Windross, I.S.M.D. (retired), temporary Civil Surgeon, Chhindwara, is transferred to Nagpur.

THE Chief Commissioner of Central Provinces is pleased to appoint Honorary Major M. Windross, I.S.M.D. (retired), temporary Civil Surgeon, Nagpur, to be Superintendent of the Lunatic Asylum, Nagpur.

THE Chief Commissioner of Central Provinces is pleased to appoint Honorary Major M. Windross, I.S.M.D. (retired), temporary Civil Surgeon, Nagpur, to be Superintendent of the Robertson Medical School, Nagpur.

ON relief by Honorary Major M. Windross, I.S.M.D. (retired), Lieutenant-Colonel A. Buchanan, M.A., M.D., M.Ch., M.A.O., Civil Surgeon, Nagpur, is appointed to be Civil Surgeon, Pachmarhi.

MAJOR A. O. C. WASTON, M.B., C.M., F.R.C.S., R.A.M.C. (retired) temporary Civil Surgeon, Hoshangabad, is appointed to be Civil Surgeon, Pachmarhi, in addition to his own duties, for the month of April and half of May, 1919.

THIRD Grade Assistant Surgeon Naoroji Hormusji Bharucha, L.M. & S., Lecturer in Chemistry and Physics, etc., at the Robertson Medical School, Nagpur, is appointed to officiate temporarily as Civil Surgeon, Chhindwara.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner of Central Provinces is pleased to appoint Assistant Surgeon Naoroji Hormusji Bharucha, L.M. & S., officiating Civil Surgeon, Chhindwara, to the executive and medical charge of the Chhindwara District Jail.

INDIAN MEDICAL DEPARTMENT.

THE GOVERNOR-GENERAL IN COUNCIL is pleased to sanction, under the provisions of paragraph 470, Army Regulations, India, Volume II, the special promotion, with effect from the dates noted against their names, of the undermentioned warrant officers of the Indian Medical Department, for services rendered during the war:—

To be 1st class Assistant Surgeons: Frank Herbert Foy and Donald Lionel Mackay, dated 25th February, 1919.

To be 2nd class Assistant Surgeons: William Victor Pope, dated 1st March, 1919; Herbert Frederick Hogan, dated 4th March, 1919.

ARMY COUNCIL INSTRUCTION.

No. 754 of 1918.

754. Order in which orders, decorations and medals should be worn.

1. Pending the publication of amendments to the Dress Regulations for the Army, 1911, the following revised list, showing the order in which orders, decorations and medals are to be worn, which has been approved by His Majesty the King, is published for information and guidance:—

This in no way affects the precedence conferred by the Statutes of certain orders upon the members thereof.)

Victoria Cross.
Order of the Garter.
Order of the Thistle.
Order of St. Patrick.
Order of the Bath.
• Order of Merit (immediately after Knights Grand Cross of the Order of the Bath).

• The Order of Merit is worn round the neck on all occasions.

Order of the Star of India.
 Order of St. Michael and St. George.
 Order of the Indian Empire.
 Order of the Crown of India.
 Royal Victorian Order (Classes I, II and III).
 Order of the British Empire (Classes I, II and III).
 Order of the Companions of Honour (immediately after
 Knights and Dames Grand Cross of the Order of the British
 Empire).

Distinguished Service Order.
 Royal Victorian Order (Class IV).
 Order of the British Empire (Class IV).
 Imperial Service Order.
 Royal Victorian Order (Class V).
 Order of the British Empire (Class V).
 Royal Red Cross (Class I).
 Distinguished Service Cross (Naval).
 Military Cross.
 Distinguished Flying Cross.
 Air Force Cross.
 Royal Red Cross (Class II).
 Order of British India.
 * Indian Order of Merit (Military).
 Kaisar-i-Hind Medal.

Order of St. John of Jerusalem in England.
 Albert Medal.
 Queen Victoria's Jubilee Medal, 1887 (Gold, Silver and
 Bronze).

Queen Victoria's Police Jubilee Medal, 1887.
 Queen Victoria's Jubilee Medal, 1897 (Gold, Silver and
 Bronze).

Queen Victoria's Police Jubilee Medal, 1897.
 Queen Victoria's Commemoration Medal, 1900 (Ireland).
 King Edward's Coronation Medal.
 King Edward's Police Coronation Medal.
 King Edward's Durbar Medal (Gold, Silver and Bronze).
 King Edward's Police Medal (Scotland).
 King's Medal, 1903 (Ireland).
 King George's Coronation Medal.
 King George's Police Coronation Medal.
 King's Visit Police Commemoration Medal, 1911 (Ireland).
 King George's Durbar Medal (Gold, † Silver and Bronze).
 Medal for Distinguished Conduct in the Field (Military).
 Conspicuous Gallantry Medal (Naval).
 Distinguished Service Medal (Naval).

Military Medal.
 Distinguished Flying Medal.
 Air Force Medal.
 War Medals (in order of date).
 Arctic Medal, 1815—1855.
 Arctic Medal, 1876.
 Antarctic Medal, 1901—1903.
 Constabulary Medal (Ireland).
 Board of Trade Medal for Saving Life at Sea.
 * Indian Order of Merit (Civil).
 Edward Medal.

Indian Distinguished Service Medal.
 King's Police Medal.
 Long Service and Good Conduct Medal.
 Naval Long Service and Good Conduct Medal.
 Medal for Meritorious Service.
 Indian Long Service and Good Conduct Medal (for
 Europeans of Indian Army).

Indian Meritorious Service Medal (for Europeans of Indian
 Army).
 Royal Marine Meritorious Service Medal.
 Indian Long Service and Good Conduct Medal (for Native
 Army).

Indian Meritorious Service Medal (for Native Army).
 Volunteer Officers' Decoration.
 Volunteer Long Service Medal.
 Volunteer Officers' Decoration (for India and the Colonies).
 Volunteer Long Service Medal (for India and the
 Colonies).

Colonial Auxiliary Forces Officers' Decoration.
 Colonial Auxiliary Forces Long Service Medal.
 Medal for Good Shooting (Naval).
 Militia Long Service Medal.
 Imperial Yeomanry Long Service Medal.
 Territorial Force Efficiency Medal.
 Territorial Decoration.

Special Reserve Long Service and Good Conduct Medal.
 Decoration for Officers of the Naval Reserve.
 Decoration for Officers of the Royal Naval Volunteer
 Reserve.

Royal Naval Reserve Long Service and Good Conduct
 Medal.
 Royal Naval Volunteer Reserve Long Service Medal.

* The Indian Order of Merit (Military and Civil) is distinct from the
 Order of Merit instituted in 1902.

† King George's Durbar Medal in Gold can be worn in the United
 Kingdom by Ruling Chiefs of India only.

Union of South Africa Commemoration Medal.
 Royal Victorian Medal (Gold and Silver).
 Imperial Service Medal.
 Medal of the Order of the British Empire.
 Medal of the Order of St. John of Jerusalem in England.
 Badge of the Order of the League of Mercy.
 Royal Victorian Medal (Bronze).
 Foreign Orders (in order of date of award).
 Foreign Decorations (in order of date of award).
 Foreign Medals (in order of date of award).

2. The above order of decorations applies to those of
 similar grades. The miniature decoration or riband re-
 presenting the higher grade of a junior order will, however,
 when worn with that representing the lower grade of a senior
 order, be placed before the latter, e.g., the miniature or
 riband of the "Indian Empire," when worn by a G. C. I. E.,
 who is also a K. C. B., will come before the miniature or
 riband of the "Bath."

3. Dress Regulations, paragraph 60, will be amended in
 due course.

Pay of temporary officers of the Indian Medical Service while serving in India.

Consequent on the introduction * of station hospitals for
 Indian troops and followers and the abolition of medical
 charge allowances hitherto admissible, it has been decided
 that temporary officers of the Indian Medical Service, who
 have been engaged for service in India only, as well as those
 engaged for general service under the terms of Army Depart-
 ment letters No. H. 3471, dated the 2nd May 1916, No. 6823,
 dated the 19th July 1916, and No. 9503, dated the 27th June
 1917 shall, while serving in India, and with effect from the
 1st December, 1918, be paid at the rate of Rs. 450 per mensem
 (consolidated).

THE Medical Services Committee, appointed by the
 Secretary of State, held several meetings in Calcutta during
 the first week in March.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession
 in India are solicited. Contributors of Original Articles will
 receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters
 and Books for Review should be addressed to THE EDITOR,
The Indian Medical Gazette, c/o Messrs. Thacker, Spink &
 Co., Calcutta.

Communications for the Publishers relating to Subscrip-
 tions, Advertisements, and Reprints should be addressed to
 THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to "*The Indian Medical Gazette*,
 Rs. 14, including postage, in India. Rs. 16, including postage,
 abroad.

BOOKS, REPORTS, &c., RECEIVED :—

Report on the Administration of Assam, 1917-18; Agriculture
 Research, Bulletin No. 80, 1918, Administration Report,
 Baluchistan Agency, 1917-18; Eradication and Control of Un-
 cinariasis in Siam; An Enquiry into the Medical Curriculum. By
 Edinburgh Pathological Club; Report: Kashmir Medical Mis-
 sion, 1918; Bradshaw Lecture: Cancer of the Tongue; Gynaecology:
 Graves, W. B. Saunders Co. Report: Chemical Exami-
 ners: Jammu and Kashmir State, 1918; Records and Memoirs
 of Indian Museum, 1918; Madras Medical Register; Eyes
 Right, Dr. Macphail.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM:—

Dr. S. H. Pugh; M. Ch. Dutt; Col. Sir W. Buchanan, I.M.S.;
 V. W. Merchant, L.M.S.; Dr. E. F. Neve; Col. Foulkes, I.M.S.;
 Editor, *B. M. J.*; C. C. Kelly, I.M.S.; Darcy Power; Dr. Chuni
 Lal Bose; League of Empire; Col. Sir L. Rogers, I.M.S.; Lt.-
 Col. R. E. Standage, I.M.S.; A. J. Masillamoney; Dr. Barnes,
 Siam; Major E. O. Thurston; Col. W. E. Jennings; Dr. Bacha;
 Dr. Noronha; Capt. Darukhanewala.

Original Articles.

THE WASSERMANN REACTION IN
SYPHILIS AS A GUIDE TO
TREATMENT.

By W. D. SUTHERLAND, M.D.,

LIEUT.-COLONEL, I.M.S.,

Imperial Serologist,

AND

RAI GOPAL CHANDRA MITRA BAHADUR, L.M.S.,

ASSISTANT-SURGEON,

Assistant Serologist, Calcutta.

We have thought it to be of service to collate the results obtained by us in 1,498 cases in which a provisional diagnosis of the condition present had been made before the patient's blood was examined for its Wassermann reaction. We are under the impression that syphilitic infection is fairly common amongst those who seek the aid of the public hospitals in Calcutta, because amongst 3,800 cases whose W. R. has been ascertained, we have found that the reaction

was very strongly positive in 1,373
 strongly " 437
 moderately " 548
 doubtful " 43
 negative " 1,399.

Thus we have 2,358 positive out of 3,800 or 62 per cent.

Taking the 1,498 cases in which our attempt to obtain a history of infection was more or less successful, we found:—

	Positive.	Negative.
History of sore	287	46
" gonorrhoea	75	27
" soft sore	15	4
" bubo alone	6	1
No history at all	680	357

This, we believe, shows that when the practitioner has any doubt in his mind as to the condition with which he has to deal, he should not give the patient the benefit of the doubt merely because he obtains a negative history from him; nay, we may further say that where a suspicion of lues exists, the patient's social status and consequent presumed immunity from infection should be utterly disregarded for the purposes of diagnosis, whatever the patient may be led to suppose as to the physician's acceptance of his statements.

Should the patient, as often happens, be anxious as to the results of a suspicious coitus, yet present no sign of infection, it is, we think, advisable to have his actual condition ascertained;

for out of 103 such cases we found that infection was present in 38, although to all seeming these men were quite healthy.

The tests were carried out with materials obtained as follows:—The *complement* was fresh guinea-pig serum, of which the dose had been determined by the only trustworthy method of titration, namely that in which the dose of *amboceptor* is kept constant while that of the *complement* is gradually lessened in the series of tubes. As pointed out by Ottenberg,* this ensures that even weakly-positive reactions shall not escape notice, as they would easily do were the titration carried out by varying the dose of *amboceptor* while keeping that of *complement* at a arbitrarily-fixed quantity. Thrice the minimum hæmolytic dose is taken as the working dose "unit." The *amboceptor* was duly titrated once and for all, and the dose used was twice the minimum hæmolytic dose. The *indicator* was a 5 per cent suspension of thrice-washed ovine erythrocytes in '85 per cent salt solution.

The antigens were as follows:—

(a) The Noguchi antigen was prepared strictly in accordance with the directions given at p. 79 of *The Serum Diagnosis of Syphilis*, 1913 edition.

(b) Alcoholic extracts of fetal heart-muscle, prepared thus:—

One part of heart-muscle is ground up with silver sand, and to the paste is added 9 parts by weight of alcohol 95 per cent. The mixture is shaken for an hour, and then left for four days at room temperature, being shaken for an hour each day. The supernatant fluid is then decanted and titrated against at least two known good antigens. As a matter of practice it has been found that 2 c.c. of a 1 in 6 dilution of the antigen is very near the proper dose, which is more accurately fixed by series of tubes in which are put '4, '35, '3, '25, '2, '15, '1 c.c. of the dilution. The dose of antigen should be that, which, after one hour's incubation at 37°C., does not of itself cause any complement-fixation.

(c) An alcoholic extract of fetal heart-muscle (or fetal liver) prepared as above, with the addition of '4 per cent cholesterine after decantation on the fifth day. Its titration is similar to that of the antigens without cholesterine.

The normal controls were obtained from healthy individuals, the syphilitic controls being made with blood obtained from prostitutes, who were at the time suffering from florid lues.

Much attention is paid to control, at the time of test, of the various ingredients, for we believe

* *Journal of Immunology*, 1917, 2, 39.

that for the observer to be able to say that the test has been accurately made, he must be certain that at the time of its performance *everything* is all that it should be. Mistakes easily occur in any laboratory manœuvre, unless care be taken. A mistake in technique, when the question of the freedom or otherwise of a patient from syphilitic infection is to be solved, may have very far-reaching results on the reputation of the observer, and of the physician who has sought his aid, as well as on the health and wealth of the patient.

The regrettable discrepancies between the findings of various laboratories would, we are sure, be reduced to a minimum, were greater care taken to ensure proper control of all ingredients at the time of test. At present, unfortunately, such cases as the following are not uncommon:—

I. A woman had for some time suffered from pain in the joints and had from time to time eruptions on the skin, but of what kind, no reliable data could be obtained. Her W. R. at laboratory A was found to be absolutely negative. Ordinary anti-rheumatic remedies were employed on the strength of this finding, but no great improvement was obtained. Again her blood was examined, this time at laboratory B, and the W. R. was reported to be strongly positive. That this finding was more in accordance with the actual state of affairs is shown by the immediate relief of all symptoms that followed the adoption of anti-syphilitic treatment.

II. A young woman who suffered from a palmar psoriasis had a negative W. R. at laboratory D, while laboratory E reported the W. R. to be strongly positive. The eruption cleared up at once under anti-luetic treatment.

III. A man of 50 suffered from excruciating headache. As his W. R. was reported by laboratory F to be 30 per cent positive, but anti-syphilitic treatment brought about no alleviation of the headache, his blood was sent to laboratory G, whence an absolutely negative report was received. In spite of this iodide of potassium was given in full doses. He became worse, so at the suggestion of laboratory G his cerebro-spinal fluid was sent for examination. Its reaction was absolutely negative. Later a deep-seated cerebral abscess was diagnosed and evacuated. The headache was at once relieved and did not recur.

IV. A woman had an obstinate skin eruption. Her W. R. was reported to be absolutely negative by laboratory H, but strongly positive by laboratory I, and as a matter of fact the eruption cleared up after a few doses of neosalvarsan, and has not recurred.

Had more care been exercised, the results obtained in both laboratories would have been identical in these cases.

That the history of infection or its absence is not to be relied on appears from the following cases:—

V. A Musalman suffered from a nodular eruption of the skin which did not yield to local treatment. He vigorously and categorically denied that he had ever had a sore or gonorrhœa, or that he had ever exposed himself to infection. But we found his W. R. to be 100 per cent and the eruption disappeared after two doses of salvarsan.

VI. A man suffered from phimosis—under the prepuce was a large sloughing sore, which, he stated, had existed for nearly six months. His W. R. was found to be 100 per cent. positive. In spite of this it was recommended by a surgeon that the sore should be thoroughly scraped and then treated with peroxide of hydrogen. But after one dose of an organic arsenic compound it disappeared within five days.

VII. A young man who denied having had a sore, suffered from ulceration of the skin and double iritis. He was treated by a homeopath but to no avail, and he became practically bed-ridden. His W. R. was found to be 100 per cent. Despite the presence of iritis 6 grains of novarseno-benzol was given and in a week the ulcer had disappeared and he was able to get up.

VIII. A man who admitted having had gonorrhœa 15 years before, but denied having had any sore on his penis or eruption on his body, was found to have a swelling of the testicle. Castration was advised but as a strongly positive W. R. was obtained, anti-syphilitic treatment was tried and the swelling rapidly subsided.

IX. A woman was suffering from an "ulcerative condition" of the uterus which was suspected to be of malignant origin. As her husband admitted having had syphilis some 20 years before, her blood was sent for examination. The W. R. was found to be strongly positive, and when energetic anti-syphilitic treatment was adopted, the uterine affection soon disappeared.

X. A man suffered from violent hemicrania. His W. R. was found to be 100 per cent positive; but a medical friend deprecated the accuracy of the test, so anti-syphilitic treatment was not adopted. Soon after his blood had been examined he became hemiplegic, and then anti-syphilitic treatment was begun and pushed, but it was a long time ere he was able to attend to his business-affairs. He is now practically well.

XI. A man denied having ever had any venereal disease. His wife had had repeated

abortions at about the sixth month of pregnancy, so her blood was sent for examination. Her W. R. was found to be strongly positive. As she was then in the fourth month of pregnancy she underwent energetic anti-luetic treatment, and was delivered at term of a healthy child. Her husband's W. R. was subsequently found to be strongly positive.

XII. No definite history of infection could be obtained from a man who was suffering from loss of memory, confusion of ideas and weakness of the legs. His physician, however, suspected lues and sent his blood for examination. The W. R. was found to be strongly positive, and treatment with neosalvarsan and mercury soon brought about an amelioration of the man's condition, which at one time threatened to end in dementia.

XIII. A man who had led a very free life, and was addicted to alcohol, was in a condition which his physician suspected to be commencing general paralysis complicated by alcoholism. As the W. R. was strongly positive, anti-syphilitic remedies were given and a great and unexpected improvement was obtained.

XIV. A man who had led a fast life but denied ever having had venereal disease found that his sight was rapidly failing. Optic neuritis was diagnosed. He himself seems to have suspected that syphilis might be the cause, in spite of his former vigorous denials of infection; for he suggested that his blood should be examined, but this was not done till later, when the W. R. was found to be 100 per cent positive. As his sight by that time was very dim, it was decided to try anti-syphilitic treatment, in spite of its reported risks in cases of nervous disease. After neosalvarsan his sight improved slightly, and the condition remained stationary for the three years during which he was under observation.

XV. A man had recurrent hæmoptysis, with low fever, which did not improve under treatment with tuberculin. His W. R. being found to be 100 per cent, he was given anti-syphilitic remedies, and the fever stopped almost at once. During the year that followed he had no further attack of hæmoptysis, and put on flesh.

XVI. A young woman had suffered from low fever and cough for a long time. No tubercle bacilli in the sputum. As her husband admitted having had a sore on his penis three years before, her W. R. was taken and found to be strongly positive. Anti-syphilitic treatment was pushed and rapid improvement of her condition was obtained.

We believe that every now and then, although the clinical aspects of the case may seem to negative the existence of a luetic taint, this

taint, when revealed by a positive W. R., should be admitted and treated.

XVII. An old woman had a nasal tumour. This was held to be malignant although her W. R. was slightly positive. When removed the growth was found to be gummatous.

In such a case a provocative injection of, say, 3 gr. of NAB would go far to turn the scale in favour of lues, if the W. R. were taken on the fifth day after the injection. On the other hand sometimes the W. R. will show that what was *clinically* luetic is not really due to syphilis.

XVIII. A man had periostitis of the ribs, and, as the physician was confident that lues was present, anti-syphilitic remedies were prescribed. But the W. R. was found to be absolutely negative, and later the cause of the condition was found to be tubercle.

That a provocative injection, given to clear up a doubtful W. R., may give great satisfaction is shown by the following cases:—

XIX. A man who denied all venereal infection was suffering from weakness of the legs and "neuritis." His W. R. was doubtfully positive, so a provocative injection of NAB was given and the blood again examined. This time the W. R. was strongly positive. Before the report was received by his physician, the loss of power in this man's legs had disappeared as the result of the provocative injection.

XX. A man was suspected to have had syphilis. His daughter suffered from an ulcer in the nose. Her W. R. was positive with a cholesterinised antigen, but negative with other antigens, so was reported to be "doubtful," and a provocative injection was suggested. This was given and then the W. R. was found to be strongly positive with all antigens. The ulcer soon healed under anti-syphilitic treatment.

In conclusion we would note that we have been struck by the number of cases in which the W. R. was not easily and favourably affected by treatment because the physician in charge of the case had pushed organic arsenic compound but neglected mercury as a means of treatment. Organic arsenic compound alone can do much and mercury can do much alone; but neither organic arsenic compounds nor mercury when given alone can do half as much as the two combined can accomplish. This was pointed out to one of us by Ehrlich in 1911, and the more syphilitics we see the more convinced are we that the fact should be known to all who have to treat them. With diffidence we mention that it seems to us that the best results have been obtained by using mercurial inunctions in preference to intra-muscular injections or pills.

Disease.	Total.		No history of sore.		History of sore.		History of G. alone.		History of G. and soft sore.		History of bubo alone.	
	+	-	+	-	+	-	+	-	+	-	+	-
ALIMENTARY SYSTEM.												
Obstinate hiccough	1	...	...	...	1	...	...	...	...	...	...	...
<i>Mouth—</i>												
Ulcer	5	1	1	1	3	...	...	...	1	...	...	...
Pyorrhœa	...	1	...	1	...	...	...	...	...	...	...	...
Hutchin's teeth?	1	...	1	...	...	...	...	...	...	...	...	...
<i>Tongue—</i>												
Ulcer	5	7	2	7	2	...	...	...	1	...	...	...
<i>Palate—</i>												
Inflammation and ulceration	16	2	12	2	4	...	...	...	...	...	...	...
<i>Tonsils—</i>												
Inflammation and ulceration	20	6	14	3	5	2	1	1	...	...	...	...
<i>Pharynx—</i>												
Tumours	2	...	2	...	...	...	...	...	...	...	...	...
<i>Œsophagus—</i>												
Stricture	1	2	1	...	...	...	...	2	...	...	...	...
Spasm	1	...	1	...	...	...	...	...	...	...	...	...
<i>Stomach—</i>												
Pain	4	...	4	...	...	...	...	...	...	...	...	...
Persistent nausea	1	...	1	...	...	...	...	...	...	...	...	...
Dyspepsia and flatulence	22	3	3	1	4	1	14	...	1	1	...	...
<i>Intestine—</i>												
Stenosis	1	...	1	...	...	...	...	...	...	...	...	...
Colitis	2	...	2	...	...	...	...	...	...	...	...	...
Colic	5	2	1	2	3	...	...	...	1	...	...	...
Appendicitis?	2	...	1	...	1	...	...	...	...	...	...	...
Chronic dysentery	5	...	3	...	2	...	...	...	...	...	...	...
Diarrhœa	...	1	...	1	...	...	...	...	...	...	...	...
Melæna	...	1	...	1	...	...	...	...	...	...	...	...
<i>Rectum—</i>												
Stricture	1	1	1	1	...	...	...	...	...	...	...	...
Ulcer	2	1	1	1	1	...	...	...	...	...	...	...
Prolapse	...	1	...	1	...	...	...	...	...	...	...	...
Fistula	1	...	1	...	...	...	...	...	...	...	...	...
Piles	...	1	...	1	...	...	...	...	...	...	...	...
Tumours	1	1	...	1	...	...	...	...	...	...	...	...
Hernia	1	...	1	...	...	...	...	...	...	...	...	...
<i>Liver—</i>												
Gumma?	...	1	...	1	...	...	...	...	...	...	...	...
Jaundice	6	3	4	...	1	2	1	1	...	...	...	...
Enlargement	1	...	...	...	1	...	...	...	...	...	...	...
Ascites	6	1	4	1	1	...	1	...	...	...	...	...
Tumour	8	4	8	4	...	...	...	...	...	...	...	...
Inflammation	10	6	4	6	4	...	1	...	1	...	...	...
Cirrhosis	4	2	3	2	1	...	...	...	...	...	...	...
Abscess	1	2	...	2	1	...	...	...	...	...	...	...
Diabetes	5	...	3	...	2	...	...	...	...	...	...	...
CIRCULATORY SYSTEM.												
<i>Heart—</i>												
Angina pectoris	1	...	1	...	...	...	...	...	...	...	...	...
Dilatation	1	...	...	...	1	...	...	...	...	...	...	...
Mitral disease	10	...	7	...	3	...	...	...	...	...	...	...
Aortic disease	4	...	2	...	2	...	...	...	...	...	...	...
"Morbus cordis"	25	6	13	4	11	1	1	1	...	...	...	...
Palpitation	1	1	1	...	...	...	...	...	...	...	...	...
"Cardiac dyspnœa"	5	1	5	...	...	...	...	1	...	...	...	...
Exophthalmic goitre	...	1	...	1	...	...	...	...	...	...	...	...
<i>Arteries—</i>												
Sclerosis	2	...	2	...	...	...	...	...	...	...	...	...
Aneurysm	6	1	2	1	3	...	1	...	...	...	...	...
<i>Veins—</i>												
Phlebitis	1	...	1	...	...	...	...	...	...	...	...	...
LYMPHATIC SYSTEM.												
Enlarged glands	12	5	10	5	2	...	...	...	...	...	...	...
<i>Elephantiasis—</i>												
Leg	5	...	3	...	2	...	...	...	...	...	...	...
Scrotum	2	...	2	...	...	...	...	...	...	...	...	...
Labia	...	1	...	1	...	...	...	...	...	...	...	...

Disease.	Total.		No history of sore.		History of sore.		History of G. alone.		History of G. and soft sore.		History of bubo alone.	
	+	-	+	-	+	-	+	-	+	-	+	-
RESPIRATORY SYSTEM.												
<i>Nose—</i>												
Inflammation bones	1	...	...	...	1	...	...	...	...	...	...	...
Ulcer	28	2	21	1	5	...	1	1	1	...	...	...
Ulcer septum	...	1	...	1	...	...	...	...	...	...	...	...
Tumour	2	1	1	1	1	...	...	...	...	...	...	...
Ozæna	1	...	...	...	1	...	...	...	...	...	...	...
Adenoids	...	1	...	1	...	...	...	...	...	...	...	...
<i>Larynx—</i>												
Inflammation	3	...	3	...	...	...	...	...	...	...	...	...
Tumour	...	2	...	2	...	...	...	...	...	...	...	...
Spasm	1	...	1	...	...	...	...	...	...	...	...	...
Hoarseness, loss of voice	3	1	2	1	1	...	...	...	...	...	...	...
Obstruction	3	1	1	...	2	...	...	1	...	...	...	...
Tubercular disease	...	1	...	1	...	...	...	...	...	...	...	...
<i>Lungs—</i>												
Cough	1	...	1	...	...	...	...	...	...	...	...	...
Spasm asthma	5	6	3	4	2	...	...	2	...	...	...	...
Hæmoptysis	8	1	7	...	1	1	...	...	...	...	...	...
Emphysema	1	1	...	1	1	...	...	...	...	...	...	...
Bronchitis	1	1	1	1	...	...	...	...	...	...	...	...
Pleurisy	1	2	...	2	...	...	1	...	...	...	...	...
Phthisis	2	1	2	...	...	1	...	...	...	...	...	...
NERVOUS SYSTEM.												
Persistent drowsiness	...	1	...	1	...	...	...	...	...	...	...	...
Insomnia	...	1	...	1	...	...	...	...	...	...	...	...
Loss of memory	3	...	3	...	...	...	...	...	...	...	...	...
Giddiness	2	...	...	...	2	...	...	...	...	...	...	...
Headache	20	11	12	7	7	2	1	1	...	...	...	1
Hemicrania	1	...	1	...	...	...	...	...	...	...	...	...
Hemichorea	...	1	...	1	...	...	...	...	...	...	...	...
Neuralgia	11	7	5	6	5	...	1	1	...	...	...	...
Neuritis	3	5	1	4	1	...	1	1	...	...	...	...
Sciatica	2	2	2	2	...	...	...	...	...	...	...	...
Paresthesia and anæsthesia	1	2	1	1	1	1	...	...	...	...	...	...
Neurasthenia	16	6	9	3	3	2	4	1	...	...	...	...
Paresis	22	6	8	5	9	1	1	...	4	...	...	...
Paralysis and paraplegia	44	12	21	12	14	...	9	...	...	...	...	...
Apoplexy and hemiplegia	52	13	18	7	12	6	2	...	...	...	...	...
Meningitis	...	1	...	1	...	...	...	...	...	...	...	...
Encephalitis?	1	...	1	...	...	...	...	...	...	...	...	...
Disseminated sclerosis	...	1	...	...	...	1	...	...	...	...	...	...
Lateral sclerosis	1	...	...	...	1	...	...	...	...	...	...	...
Paralysis agitans	1	...	...	...	1	...	...	...	...	...	...	...
Myelitis	5	4	3	4	1	...	1	...	...	...	...	...
Locomotor ataxia?	3	2	1	1	2	1	...	...	...	...	...	...
Gen. Par. Insane?	11	...	10	...	...	...	1	...	...	...	...	...
Insanity	7	4	5	4	2	...	...	...	...	...	...	...
Imbecile	3	...	3	...	...	...	...	...	...	...	...	...
Epilepsy	8	3	5	3	1	...	2	...	...	...	...	...
Jacksonian epilepsy	1	1	...	1	1	...	...	...	...	...	...	...
Chorea	1	1	1	1	1	...	...	...	...	...	...	...
Cerebral tumour	4	1	2	1	2	...	...	...	...	...	...	...
Disordered reflexes	3	...	2	...	1	...	...	...	...	...	...	...
General pain	...	4	...	4	...	...	...	...	...	...	...	...
LOCOMOTOR SYSTEM.												
<i>Bone—</i>												
Periostitis	11	5	8	5	2	...	...	...	1	...	...	...
Osteitis	...	1	...	1	...	...	...	...	...	...	...	...
Osteo-myelitis	...	1	...	1	...	...	...	...	...	...	...	...
Fragilitas ossium	...	1	...	1	...	...	...	...	...	...	...	...
Ununited fracture	...	1	...	1	...	...	...	...	...	...	...	...
Caries	1	1	...	1	1	...	...	...	...	...	...	...
Necrosis	11	4	11	4	...	...	...	...	...	...	...	...
Sinuses	14	1	8	1	5	...	1	...	...	...	...	...
<i>Joints—</i>												
Arthritis	15	2	7	...	5	2	2	...	1	...	...	...
Ankylosis	...	1	...	1	...	...	...	...	...	...	...	...
Synovitis	4	3	4	3	...	...	...	...	...	...	...	...
<i>Muscles—</i>												
Lumbago	3	...	1	...	2	...	...	...	...	...	...	...
Rheumatism	38	12	20	4	11	1	6	4	1	3	...	...
INTEGUMENTARY SYSTEM.												
Ulcers	74	14	53	12	14	1	2	1	1	...	4	...
Patches anæsthetic	1	4	1	3	...	1	...	...	...	...	...	...
" discoloured	2	...	2	...	...	...	...	...	...	...	...	...
" nodular	1	2	...	2	1	...	...	...	...	...	...	...

Disease.	Total.		No history of sore.		History of sore.		History of G. alone.		History of G. and soft sore.		History of bubo alone.	
	+	-	+	-	+	-	+	-	+	-	+	-
INTEGUMENTARY SYSTEM—contd.												
Psoriasis palmar	2	...	2	...	...	...	...	...	...	...	...	...
" general	27	5	22	5	5	...	...	...	...	...	...	...
Lupus?	2	1	1	...	1	1	...	...	...	...	...	...
Alopecia	2	1	1	...	1	1	...	...	...	...	...	...
Onychia	2	2	1	1	1	1	...	...	...	...	...	...
Ichthyosis	1	1	1	1	...	...	...	...	...	...	...	...
Leucoderma	7	3	5	3	2	...	...	...	...	...	...	...
Dermatitis chr.	1	1	...	1	1	...	...	...	...	...	...	...
" epiphytic	3	1	2	...	1	1	...	...	...	...	...	...
Condyloma?	5	2	4	...	1	...	...	...	...	...	...	...
Eczema	5	9	5	8	...	1	...	...	...	...	...	...
Scabies? ... ..	...	1	...	1	...	...	...	...	...	...	...	...
"Eruptions" suspicious, cause not specified	96	27	47	22	40	2	7	3	...	...	2	...
URINARY SYSTEM.												
Incontinence	1	...	1	...	...	...	...	...	...	...	...	...
Retention	1	...	1	...	...	...	...	...	...	...	...	...
Stricture urethra	1	...	1	...	...	...	...	...	...	...	...	...
Hæmaturia	1	...	...	...	...	...	1	...	...	...	...	...
Nephritis	4	4	2	2	...	2	2	...	...	...	...	...
GENERATIVE SYSTEM.												
<i>Male generative system.—</i>												
Varicocele	1	...	1	...	...	...	...	...	...	...	...	...
Hydrocele	1	1	1	1	...	...	...	...	...	...	...	...
Epididymitis	1	1	1	1	...	...	...	...	...	...	...	...
Orchitis	3	2	1	1	2	1	...	...	...	...	...	...
Tumour of testicle	2	...	1	...	...	...	...	...	1	...	...	...
Cancer penis	2	...	2	...	...	...	...	...	...	...	...	...
Recurrent pimples on glans penis	15	5	15	4	...	1	...	...	...	...	...	...
Impotence	1	2	...	1	1	...	...	1	...	...	...	...
Sterility ... ..	...	1	...	...	...	...	...	1	...	...	...	...
<i>Female generative system.—</i>												
Mamma—Tumours	1	...	1	...	...	...	...	...	...	...	...	...
Uterus—Endometritis	1	...	1	...	...	...	...	...	...	...	...	...
Disease of womb	14	...	12	...	1	...	1	...	...	...	...	...
"Ulcer of womb"	1	...	1	...	...	...	...	...	...	...	...	...
Menorrhagia	1	...	1	...	...	...	...	...	...	...	...	...
Dysmenorrhœa	1	...	1	...	...	...	...	...	...	...	...	...
Repeated miscarriages	23	14	22	13	1	1	...	...	...	...	...	...
Vagina—Leucorrhœa	1	...	1	...	...	...	...	...	...	...	...	...
EAR.												
Otitis	1	1	1	1	...	...	...	...	...	...	...	...
Deafness	3	1	3	1	...	...	...	...	...	...	...	...
EYE.												
Dimness of vision	5	2	3	2	2	...	...	...	...	...	...	...
Diplopia	1	...	1	...	...	...	...	...	...	...	...	...
Optic neuritis	15	2	11	2	2	...	2	...	...	...	...	...
Iritis	12	2	8	2	3	...	1	...	...	...	...	...
Scleritis	2	...	...	...	2	...	...	...	...	...	...	...
Ophthalmia	2	...	1	...	...	...	1	...	...	...	...	...
Keratitis	9	1	9	1	...	...	...	...	...	...	...	...
Lachrymal cyst	1	...	1	...	...	...	...	...	...	...	...	...
MISCELLANEOUS.												
Measles?	1	...	1	...	...	...	...	...	...	...	...	...
"Fever"	22	8	11	5	9	3	2	...	...	...	...	...
Tumours	21	9	8	8	12	1	1	...	...	...	...	...
Cancer?	5	5	4	5	1	2	...	...	...	...	...	...
Leprosy?	2	3	1	1	1	...	...	...	...	...	...	...
Gumma	12	...	5	...	7	...	...	...	...	...	...	...
Gout	1	2	...	2	1	...	...	...	...	...	...	...
Obesity ... ..	...	1	...	1	...	...	...	...	...	...	...	...
Rapid loss of weight	2	1	...	...	2	...	...	1	...	...	...	...
Kala-Azar?	1	1	...	1	1	...	...	...	...	...	...	...
Beri-beri? ... ..	...	1	...	1	...	...	...	...	...	...	...	...
Rickets? ... ..	...	1	...	1	...	...	...	...	...	...	...	...
Addison's disease ... ..	...	1	...	1	...	...	...	...	...	...	...	...
Abscesses	3	5	2	5	1	...	...	...	...	...	...	...
Gangrene ... ..	...	1	...	...	...	...	...	...	...	...	...	...
Operation wound tardily healing	4	2	4	2	...	1	...	...	...	...	...	...
Syphilitic infection? (finger pricked at operation)	3	2	3	2	...	...	...	...	...	...	...	...
Anxiety after coitus with prostitute	38	65	38	65	...	...	...	...	...	...	...	...
Anæmia	3	3	2	2	1	...	...	1	...	...	...	...
General debility	3	...	...	...	...	...	...	...	...	...	...	...
Dropsy	3	1	3	1	...	...	1	...	...	...	...	...

A CASE OF VIPER POISONING.

FORWARDED BY F. WALL.

LIEUT.-COL., I.M.S.,

Bangalore.

BY S. W. COFFIN,

CAPT., R.A.M.C. (T.C.)

THE following notes sent to me by Captain Coffin, R.A.M.C. (T.C.), are more detailed in their clinical observations, and instructive with regard to treatment, than any hitherto contained in the literature of Indian viperine poisoning, and as such constitute a valuable contribution to the subject. It would have been more satisfactory had the snake that inflicted the wound been captured, but the clinical picture of the case in my opinion amply justifies the diagnosis of viperine poisoning. The locality, *viz.*, Malappuram, makes it certain that the snake responsible for the casualty was either a Russell's viper (*Vipera russelli*), or a saw-scaled viper (*Echis carinata*).

CASUALTY RETURN OF SNAKE-BITE.

Station	...	Malappuram.
Sex	...	Male (sweeper).
Age	...	19.
Date and hour of bite	...	January 22nd, 1919, about 8 P.M.
Hour of admission	...	About 8-15 P.M.
Part bitten	...	Right ankle—outer side.
Species of snake	...	Not seen, symptoms point to viperine poisoning.
Result	...	Cure.
<i>Symptoms, Local:—</i>		
(a) Pain	...	Considerable, but reduced after incision and application of KMnO_4 .
(b) Swelling	...	<i>Nil.</i>
(c) Sanious oozing	...	<i>Nil.</i>
(d) Appearance of Tissues where cut into	...	Not noticed to be abnormal.
(e) Character due to mechanical causes	...	Trace of blood covering one small mark.
<i>Symptoms, General:—</i>		
(a) Consciousness	...	Normal.
(b) Respiration	...	Normal for first 36 hours—after this "air hunger."
(c) Syncope, Pallor	...	Considerable—after 36 hours.
Warmth and activity of skin	...	After 36 hours cold and clammy with much sweating.
Pulse	...	Normal at first; after 36 hours pulseless.
Vomiting	...	Only after 36 hours.
Onset of weakness	...	<i>Nil.</i>
(d) Paralysis, onset of weakness	...	<i>Nil.</i>
Sequence	...	<i>Nil.</i>
Drooping head	...	<i>Nil.</i>
Drooping eyelids	...	<i>Nil.</i>
Articulation	...	<i>Nil.</i>
Phonation	...	<i>Nil.</i>
Deglutition	...	<i>Nil.</i>
Salivation	...	<i>Nil.</i>
(e) Hæmorrhage	...	Epistaxis after about 84 hours, which continued intermittently for two days. Syncope may have been caused by an internal hæmorrhage or splanchnic dilatation.
(f) Other symptoms	}	See clinical notes.
(g) Treatment		

CLINICAL NOTES.

On account of lack of swelling and lack of bleeding the bite was at first diagnosed as non-poisonous. On admission a tight ligature was applied and the bite was incised and KMnO_4 rubbed in. After half an hour the ligature was so painful that it had to be removed. At 9 P.M. (one hour after bite) local pain had almost disappeared and the patient seemed fairly comfortable, with a full pulse and warm skin. No symptoms of toxæmia were noted. As a precaution, in case of wrong diagnosis, 40 c.c. of Kasauli antivenene (six months old) was filtered and injected into the right axilla. The patient did not seem in any way frightened or apprehensive.

On the following day patient seemed fairly well (slight pyrexia), but towards afternoon was somewhat drowsy. No paralyses.

Next morning about 9-30 A.M.—36 hours after bite—patient was found cold, pulseless, sweating, and exhibiting marked air hunger. He was also vomiting. Viper poisoning was diagnosed. Pituitary 1 c.c. given. Antivenene could not be given intravenously, as all available veins were absolutely collapsed, and the general condition contra-indicated an anæsthetic to enable a vein to be cut down on. 80 c.c. Kasauli antivenene (unfiltered, one year old) was given into the left axilla, followed by 40 c.c. Kasauli antivenene (filtered, six months old) into the right thigh. Hot coffee was given. Patient was still absolutely pulseless, cold and clammy and very restless, in fact in a very critical condition, and saline was given into the right axilla. Absorption was very slow indeed, and the infusion (with hot bottles and occasional hot coffee) was continued until 3-30 P.M. (only $1\frac{1}{2}$ pints absorbed), by which time a fluttering pulse of 140 was felt.

When seen again, at 4-30 P.M., he was once more pulseless, cold, and clammy, and $1\frac{1}{2}$ pints of rectal saline were given, but only a small part was retained. This was followed by liquor adrenalin hyd. m.x. (hypodermically), and CaCl_2 (gr. 1 in 20 minims of water) intramuscularly into the glutei. By 6 P.M. his pulse was better, and the restlessness and air hunger much decreased. By 9 P.M. he was warm, sleeping, and with a good pulse of 84.

The following day his vomiting was better, and his pulse still good. The incision in the foot was painful and swollen (no pus), and was fomented.

Next morning he had considerable epistaxis, and was given CaCl_2 , gr. 1, as above intramuscularly. The epistaxis continued next day and CaCl_2 was repeated. No more CaCl_2 was necessary, as the epistaxis was completely controlled.

Fourteen days after the bite patient was up and about, and a small slough was coming away well, from the base of the bite incision.

Constipation throughout was marked, and considerable epigastric tenderness was noticeable. There were no definite signs of intra-abdominal hæmorrhage, and it was not decided whether the profound syncope was caused by an unfound internal hæmorrhage or splanchnic dilatation.

On the day of the syncope, during the relapse in the evening, very marked improvement was noticed after hypodermic adrenalin, and intramuscular CaCl_2 .

No hæmorrhages, other than epistaxis were seen.

On February 1st a Russell's viper, 3' 2" long, was caught in a drain at the spot where the patient was bitten.

The patient is now doing light work, and the bite incision is granulating.

Special interest attaches to the following points :—

Symptoms. (1) It is interesting to note the protracted interval, as compared with poisoning from colubrine venoms, that elapsed before the earliest signs of toxæmia were observed. In cobra poisoning, for instance, the commencement of paralysis is frequently seen in two hours or even less, and in krait (*Bungarus caeruleus*) poisoning in four hours or less.

The long interval in this case (*viz.*, 36 hours) before constitutional signs were apparent is an important observation, because one so frequently reads in the reports on such cases that syncope was an early sequel to the bite. Evidently early syncope in such cases is to be ascribed to agencies other than venom, as for instance pain, anxiety, or the actual dread of the consequences of the accident.

(2) The constitutional symptoms in the case are quite typical, *viz.*, first syncope, then hæmorrhage.

(3) The absence of all local symptoms except pain is noteworthy, since viper poisons as a class are credited with producing very pronounced local effects. It was the intensity of the pain that led Captain Coffin however to suspect an envenomed wound, and take the very wise precaution of administering antivenene.

Treatment. (1) It is difficult to say what effect the antivenene had on the case. The exhibition of this serum was undoubtedly demanded, and it may have exercised a greater influence than the clinical aspect of the case shows, which is not convincing.

If the bite was due to an *Echis*, as it may have been, the dubious benefit of the antivenene is easily accounted for, since the Kasauli product is not antidotal to *Echis* venom.

(2) In my book "The poisonous snakes of India" (third edition, 1913, p. 139) I pointed out that adrenalin should prove a very valuable agent in the syncope of viper poisoning, as well as in the control of the attendant hæmorrhages.

In Captain Coffin's case the value of adrenalin was remarkably demonstrated, the turning point in the progress of the case being apparently due to its administration. Chloride of calcium, which was injected at the same time, has no direct action on syncope, and up to the time of its injection no hæmorrhages had occurred.

In considering the question of the treatment of viper poisoning, I would like to take this opportunity of drawing special attention to two recent contributions to medical literature, which appear to me to justify the most sanguine hopes of success in the treatment of this toxæmia in the future. I allude to the researches by Professor Bayliss on the etiology and treatment of surgical shock, "intravenous injection in wound shock" (Longmans, Green & Co.) and to a paper contributed by Mr. W. R. Grove to *Guy's Hospital Gazette* for May 18th, 1918, on the control of hæmorrhage by intramuscular injections of calcium chloride.

Now the main effects of viper poisoning are first syncope, later hæmorrhages. Professor Bayliss' work then affects the treatment of the former, and Mr. Grove's paper the treatment of the latter condition.

Professor Bayliss has shown that surgical shock is due to a poverty of fluid in the blood vessels consequent upon depression of the vaso-motor system and general capillary dilatation. To combat the condition he shows that fluid should be restored to the blood vessels, and recommends the intravenous injection of a special solution designed to imitate the physical characters of blood. This fluid in his opinion is superior to any of the saline solutions which have been hitherto employed. It is prepared as follows :—

Gum arabic...	...	...	7.00 parts
Sodium chloride	...	..	0.90 "
Water	...	...	92.10 "
			100.00

The solution must be sterilised, and is injected intravenously in quantities sufficient to restore normal blood pressure.

Now viper poison has a twofold action on the heart. It depresses the vaso-motor centre, and also the cardiac muscle, and a syncope is produced analogous to that seen in surgical shock.

2. Intravenous injections, as suggested by Professor Bayliss, are doubly indicated in this toxæmia, firstly to overcome the direct influence of the venom on the heart, and secondly to combat the contributory syncope arising from the hæmorrhages which are always so notable a feature of viper poisoning. Mr. Grove's paper referred to above is too long to publish "in extenso," but the main points are as follows:—

(1) CaCl_2 increases the coagulability of the blood.

(2) If taken internally CaCl_2 is absorbed very slowly, and practically all the salt so administered is recoverable from the faeces.

(3) CaCl_2 beyond a certain amount reduces the coagulability of the blood instead of increasing it. The amount appears to be a small one.

(4) CaCl_2 (1 gr. to 20 minims of water) given hypodermically causes local gangrene, but when injected intramuscularly (gluteal region selected) is painless, and produces no local ill-effects.

(5) CaCl_2 given as above acts like a charm in hæmoptysis, and many other forms of hæmorrhage.

(6) Ten grains of the salt injected in one case produced a terrible femoral thrombosis, and gangrene.

The writer asks for further information on the following points :

(a) How soon is the salt excreted from the blood after injection as above ? On this depends the advisability of repeating the injection.

(b) Would a dilution greater than that above be better ?

(c) Is its use as above contra-indicated in old people with roughened arteries ?

To these I would add

(d) What is the average amount of CaCl_2 beyond which reduction in coagulability of the blood is produced ?

As hæmorrhage is usually a very pronounced symptom in viper poisoning, CaCl_2 seems to be specially indicated in these cases. In my book (*ibid.* p. 38), I suggested that calcium might prove a very useful agent in the hæmorrhages produced by snake-poisoning, if injected instead of being given internally. I did not know however of the local effects cited above when given hypodermically, and I advocated large doses, which in the light of Mr. Grove's paper is clearly a mistake.

Of course the treatment now recommended, *viz.*, intravenous injections of Bayliss's fluid, injection of adrenalin and the intramuscular injections of 1 gr. of CaCl_2 with 20 minims of water, is not intended to supersede the administration of antivenene, which should always be injected in cases of viper-poisoning, known to be due to Russell's viper or of dubious origin. The treatment is intended as an adjunct to cases known to be due to Russell's viper, and should prove extremely valuable in cases of *Echis* poisoning, there being no available antivenene for the treatment of these cases.

CHOLERA PROPHYLACTIC VACCINATION.

By ASHUTOSH ROY, L.M.S.

Medical Officer, Tea District Labour Supply Association,
Hazaribagh.

VACCINATION against cholera has been proved to be so highly efficacious in the army and labour

corps as to warrant its extensive use as a prophylactic measure amongst the civil population in India during an epidemic, or when it is likely to break out.

"Doster calls attention to the efficacy of anti-cholera vaccination in the Balkan wars; Cardinatis reported its success amongst the civil population of Greece."—*Sajous' Encyclopædia*.

It has also been found efficacious in the Japanese epidemic of 1902, in the Russian epidemic of 1908-9, as also in the tea districts in Assam.

"In the recent European war, the beneficial effect of prophylactic inoculation (of cholera) had been proved by Hoffman in the German army and by Kaup in the Austro-Hungarian army."—*Indian Journal of Medical Research*.

Cholera Organism.—In 1883 Koch discovered the cholera vibrio in Egypt as the specific cause of the disease. Pfeiffer's agglutination test distinguishes it from allied species of non-pathogenic comma bacilli.

Nature of Cholera Toxin.—The original view of Pfeiffer is that the toxin of cholera organism is an *endotoxin*, existing as a constituent of the cell which becomes soluble only through disintegration of the organisms. This view is generally believed by the profession at present and has been supported by Kalle, Wasserman, Bran. Dennier, Strong and others.

On the other hand Metchnikoff, Roux, Salimbeni and others believed that the cholera organism produces a soluble diffusible toxin (exotoxin).

"Immunity may be active by injection of vaccine or passive, by injection of serum, anti-toxic or bactericidal or both.

Active immunisation, which is of longer duration and preferable to the passive type, may be obtained by —

- (i) injection of virulent living virus ;
- (ii) injection of attenuated virus ;
- (iii) injection of organisms destroyed by heat or antiseptics ;
- (iv) injection of bacterial extracts (*e.g.* ; anti-toxins, antiaggressins) ;
- (v) injection of sensitized vaccines, *viz.*, by treating the vaccine with serum before injection with the serum removed ;
- (vi) Injection of both vaccine and the corresponding immune serum.

The last two forms of immunisation is obtained by what is known as the combination method or *sero-vaccination*."—*Forcheimer's Therapeutics of Internal Diseases*.

Development of Cholera Prophylactic Vaccination.—Following the discovery of cholera spirillum by Koch, "Ferran in 1885 injected hypodermically ordinary laboratory cultures of cholera vibrio obtained direct from cholera corpses. No attempt was made to regulate or standardise in any way the virulence of the cultures. The

results were not encouraging."—*Manson's Tropical Disease*.

"The Spanish doctor must be regarded as the originator of inoculation of cultures of the comma bacillus as a prophylactic against cholera."—*Rogers' Cholera and its Treatment*.

"The question was re-opened by suggesting an injection of vibrios killed by heat (Gamaleia, 1888) and by phenol (Iannandroff, 1892)."—*Sajous' Encyclopædia of Medicine and Surgery*.

Haffkine in 1892-93, after elaborate experiments on lower animals, commenced a system of anti-cholera vaccination, using *pure virus of fixed and known strength*. Cultures prepared by him when injected hypodermically gave rise to a *general and local reaction*, the latter being so strong that it ordinarily ended in extensive sloughing and ulceration.—*Manson*.

He then prepared a milder vaccine, where the *general and local reactions were less severe*. He used 2 vaccines one weak or attenuated, and the other strong or exalted, at *interval of 5 days*. The degree of protection was supposed to be proportional to the severity of the symptoms caused by injection.—*Sajous*.

"He used the living bacilli in all his trials, as he considered *heat or antiseptics* for sterilizing them *diminished their effect*."—*Rogers*.

Kalle in 1894-97 clearly demonstrated that the blood serum of those vaccinated with *living or dead cholera bacillus* had a *powerful bactericidal and agglutinating effect* on cholera organism, and this property was *not destroyed by heat or chloroform*. Hence he advised a "*single injection of vaccine*" with phenol added.—*Rogers' Cholera*.

Numerous minor modifications of the above methods have been advocated from time to time, including various complicated chemical processes for extracting nucleo-proteids, etc., from the bacilli and preparing an antitoxic and anti-bacterial cholera serum. Amongst the workers may be mentioned Metchinkoff and his colleagues (1896), MacFayden (1902), Kraus (1904), Bran and Dennier (1905), Carrier and Tomarkin (1909), Lustig and Galleoti (1912), Petteoni and Horowitz (1913), followed by others. *Rogers, Forcheimer*. Sensitized cholera vaccine was first suggested by Besredka, who subsequently removed the serum. Others tried heated vaccine sensitized and serum removed before injection; others again injected sensitized vaccine and serum, both separately.

Antiaggressin Cholera Serum—Following Bail's theory of aggressin, "Rotki, in 1914, injected sterile aggressin after it had been robbed of its bacterial immunizing properties by treating with large quantities of killed vibrio.

Zinssar and Dwyer suggest that the aggressin is of the nature of *Antiphylatoxin*."—*Strong in Forchiemer's Therapeutics*.

Strong's Vaccine.—"Strong (1903) set himself to prepare a vaccine containing the substance which provoked the formation in the system of bactericidal and agglutinating properties, but was less toxic than Haffkine's prophylactic, using Kalle's method for measuring the degree of immunity produced. As it is now universally acknowledged that the true cholera toxins are intracellular in nature, it is essential to extract these from the bacilli. In agar culture after 48 hours a very large proportion of organisms are dead, while a *proteolytic ferment is present which acts on the toxins and largely converts them into less poisonous toxoids*. Strong took advantage of the fact that the ferment is not destroyed by a temperature which kills the bacilli."—*Rogers*.

Strong's vaccine is much milder than Haffkine's, it is *equally efficacious*, and at the same time it produces *no local and only a slight general reaction*.

Different Cholera Vaccines.—Thus we find that there were a number of cholera vaccines more or less efficacious producing various degrees of local and general reaction. These were:—

- (1) Living cultures.
- (2) Sensitized vaccine with or without serum.
- (3) Attenuated virus.
- (4) Autolysed vaccine emulsion in distilled water.
- (5) Carbolised vaccine.
- (6) Heated vaccine with or without serum.
- (7) Aggressin.
- (8) Heated vaccine sensitized and serum removed.
- (9) Nucleo-proteid of MacFayden, Lustig and Galleoti.

Animal Experiments with Cholera Vaccine.—These were made from time to time to select a vaccine which would combine high immunizing power with minimum local and general reaction.

(1) Experiment by *Sebastian, 1912*; vaccines used:—

- (a) Prepared by Kolle's method.
- (b) " by Wright's method.
- (c) Autolysed emulsion in distilled water.
- (d) Aggressin from guinea-pig.
- (e) Nucleo-proteid of Lustig and Galleoti.

Tests applied in Animal Experiment:—

- (1) Pfeiffer's agglutination test for antibody.
- (2) Local reaction marked by localised swelling, etc.
- (3) General reaction marked by fever, etc.
- (4) Complement fixation test for alexin.
- (5) Bactericidal action of immune serum.

Sebastian's results:—

- (1) Immunity from one dose of aggressin and 5 doses of the rest due to production of largest quantity of agglutinin.

(2) No rise of temperature from aggrassin, which was however not free from harmful results.

(3) Wright's and Kolle's vaccine were strongly bactericidal.

(4) All the five varieties produced sera which fixed complement.—*Tropical Diseases Bulletin*, 1913.

(II) EXPERIMENT IN THE LABORATORY OF
THE CENTRAL RESEARCH INSTITUTE
(KASAUJI), 1916.

Vaccines used:—

- (1) Living culture.
- (2) Sensitized vaccine.
- (3) " " plus serum.
- (4) Heated vaccine.
- (5) " " serum removed.
- (6) " " plus serum apart.
- (7) Carbolised vaccine.
- (8) Modified Strong's vaccine.

Tests applied:—

(1) Local reaction marked by swelling at site of inoculation.

(2) General reaction marked by rise of body temperature.

(3) Agglutination (Pfeiffer's). The antigenic power was taken as an indication of the amount of agglutinin produced.

Results:—

(1) Local reaction—marked in living vaccine and sensitized vaccine plus serum.

(2) General reaction—order of suitability.

- (a) Sensitized vaccine.
- (b) Heated vaccine—serum removed.
- (c) Carbolised vaccine.
- (d) Modified Strong's vaccine.
- (e) Heated vaccine—serum apart.
- (f) Living organism.
- (g) Heated vaccine.
- (h) Sensitized vaccine plus serum.

(3) Agglutinating power—order of suitability.

- (a) Heated vaccine without phenol.
- (b) Living culture.
- (c) Modified Strong's vaccine.
- (d) Heated vaccine and serum apart.
- (e) Sensitized vaccine plus serum.

- (f) $\left\{ \begin{array}{l} \text{Carbolised} \\ \text{Sensitized} \\ \text{Heated} \end{array} \right\}$ vaccine.

From the point of efficiency combined with minimum reaction, the choice appeared to be in favour of carbolised vaccine.—*Indian Journal of Medical Research*.

The New Cholera Vaccine of Kasauli.—It is the result of various experiments done from time to time. It combines the efficiency of Haffkine's vaccine with no local or general re-action at all, which actions prevented to a great extent the popularity of prophylactic vaccination against cholera, especially amongst the civil population

in India and elsewhere. It is the triumph of science, being a purely laboratory product.

It consists of "pure sterilized culture of cholera spirillum absolutely free from any reaction (local or general), and can be safely injected into people of both sexes, of all ages, including infants, and in all stages of health, including pregnant and recently delivered women. The only two contra-indications are fever and diarrhoea. Vaccine is preferred by all recent workers to "cholera sera, which is mainly bactericidal and little antitoxic," for death in cholera is due to "disintegration of cholera vibrio and the production of a soluble diffusible toxin." Strong and others believe however that an antitoxic cholera serum will yet be discovered.

I beg to attach herewith a copy of instructions for inoculation and re-inoculation with the "new cholera vaccine" of Kasauli.

CENTRAL RESEARCH INSTITUTE, KASAUJI,
PUNJAB, INDIA.

*Instructions for Inoculation and Re-inoculation
with Cholera Vaccine.*

1. COMPOSITION.

The Kasauli cholera vaccine consists of sterilized pure cultures of the cholera spirillum.

No beef is used in the preparation of this vaccine.

2. METHOD OF INOCULATION.

The syringe is preferably sterilized by drawing up several times into the barrel olive oil which has been heated to, and maintained at, about 160°C.

If a thermometer is not available, a piece of bread dropped into the oil acts as a very good substitute as it turns brown at 160°C. The contents of the capsule having been thoroughly shaken up the tip of the capsule is heated in the flame of the spirit lamp. Some of the vaccine is then jerked up into this heated portion. This will crack the glass and the point of the capsule can then be broken off by simply tapping it.

Hold the capsule with its opened end downwards and introduce the needle of the sterilized syringe. Fill the syringe with the contents of the capsule.

3. SITE FOR INOCULATION.

The vaccine may be injected into any part of the body where the subcutaneous tissue is loose. Convenient situations are the back and outer surface of the upper arm or the front of the chest about 3 inches below the clavicle.

The skin should be cleansed with an antiseptic lotion or with tincture of iodine, and the inoculation made in the usual way.

1. Prophylactic cholera inoculation is carried out by inoculation with two doses of cholera

vaccine, *i.e.*, $\frac{1}{2}$ c.c. followed by 1 c.c. 10 days later.

2. Persons should as far as possible be prevailed upon to undergo cholera inoculation when cholera is anticipated, or an epidemic exists, and when about to proceed on active service in cholera infected areas.

The immunity produced is at its maximum for four months and remains to a lesser degree up to six months or more. For this reason, when inoculations are made to protect the individuals from cholera in India, they should be performed just prior to the cholera season, the incidence of which markedly increases in April, reaches a maximum in July and August, and almost dies out in November.

3. Re-inoculations should be carried out preferably annually and the same dose system employed.

4. Contra-indications to full dosage are debility and bowel affections. Where contra-indications exist, three modified doses, *e.g.*, $\frac{1}{4}$ c.c., $\frac{1}{2}$ c.c. and $\frac{3}{4}$ c.c. should be given at intervals of 8 to 10 days.

5. In healthy individuals and under favourable conditions cholera inoculations may be given so as to overlap with routine T. A. B. inoculations, provided the doses are properly interspersed. The first dose of the cholera vaccine should be given first, and when the reaction has totally subsided, the first dose of the T. A. B. vaccine may be given. The second doses will follow at intervals of 10 days, respectively.

In dealing with women, children, and debilitated persons the dose should be proportionately diminished.

DOSAGE FOR CHILDREN.

	1st dose.	2nd dose.
4-6 years	0.15 c.c.	0.3 c.c.
6-8 "	0.2 c.c.	0.4 c.c.
8-10 "	0.25 c.c.	0.5 c.c.
10-12 "	0.3 c.c.	0.6 c.c.
12-14 "	0.4 c.c.	0.8 c.c.
14 years and upwards	0.5 c.c.	1 c.c.

1 c.c. corresponds to 18 minims.

It is not usually considered advisable to inoculate children under four years of age.

All indents for cholera vaccine should be addressed to the Director, Central Research Institute, Kasauli.

Cholera Prophylactic Vaccination of Tea District Labour in Hazaribagh.—The Tea districts in Assam get their supply of labour from the various districts of Chota Nagpore as well as from Cuttack, Sambalpoore and other places. Generally it takes a week for the coolies recruited in Chota Nagpore to reach their destinations, the different tea gardens. *En route* they often get attacks of cholera and a good many die, while the rest are segregated, to the great loss of the tea gardens and danger to the local

population of the various districts through which they travel.

Accordingly the Chairman of the Labour Board in Assam, Lieut.-Col. Kennedy, I. A., suggested inoculating every individual cooly, in the various depôts of the different districts where they are recruited, with cholera vaccine before they start for the gardens. It was also suggested that the "new cholera vaccine" from Kasauli should be tried. The writer was then engaged for the work by Mr. Thompson, local agent of the Tea District Labour Supply Association (Messrs. Begg, Dunlop & Co. of Calcutta), at their Hazaribagh agency.

The Kasauli authorities recommend that the prophylactic cholera inoculation should be carried out "with 2 doses of cholera vaccine— $\frac{1}{2}$ c.c. followed by 1 c.c. 10 days later." It was suggested by Lieut.-Col. Kennedy that the first dose, of $\frac{1}{2}$ c.c., should be injected into each adult cooly to confer immunity against the disease *en route*.

The work of cholera inoculation was started at the Hazaribagh agency from the 25th February, 1919. As the directions from Kasauli—which say that "it is not usually considered advisable to inoculate children under 4 years,"—were not at the time forthcoming, and as the express orders were to inoculate all irrespective of age and sex, and, as owing to almost famine price of foodstuffs, not only healthy adults, male and female, were leaving the district, but were also taking along with them their dependants, who were often weak and emaciated old men and women, children and infants. I had the unique opportunity of inoculating them all, in various stages of health, age and sex (including some pregnant and some recently delivered women). In fact the motley group consisted of as diverse a company regarding age, health and sex as is conceivable. The result was most satisfactory. Not only was there no case of cholera *en route* but at the same time there was entire absence of any local or general reaction.

Statistics of Cases Inoculated from 25th February to 8th April, 1919.

Date.	Children and infants under 4	Adults.	Total.
25th Feb. 1919	18	80	98
26th " "	14	103	117
27th " "	29	119	148
28th " "	13	62	75
1st Mar. "	15 (one infant 15 days old).	64	81
3rd " "	12	83	95
4th " "	15	135	150
5th " "	23	124	147
6th " "	23	109	132
7th " "	9	64	73
8th " "	15	58	73
10th " "	12	106	118
	5	63	68

Date.	Children and infants under 4	Adults.	Total.
12th Mar. 1919	17	116	133
13th " "	13	144	157
14th " "	13	89	102
15th " "	10	76	86
16th " "	6	86	92
18th " "	7	75	82
19th " "	6	107	113
20th " "	11	73	84
21st " "	8	117	125
22nd " "	10	128	138
24th " "	14	151	165
25th " "	4	62	66
26th " "	13	120	133
27th " "	—	16	16
18th " "	4	118	122
29th " "	6	62	68
21st " "	7	138	145
3rd Apl " "	—	37	37
2nd " "	10	81	91
3rd " "	7	61	68
4th " "	11	79	90
5th " "	8	152	160
8th " "			
Total ...	388 (Infants under four years old)	3,250 (Adults, including old persons.)	
Grand Total ...	3,638 individuals.		
Actual working days	35		

Untoward effects of Inoculation.—Out of 3,250 adults inoculated, two of them got fever the same evening, within a few hours after injection, but it subsided the next morning, without medicine; one man got diarrhoea and vomiting next day, *i.e.*, within 24 hours after injection and was sent to the local hospital and got cured.

On enquiry the writer found that the two persons who got fever suffered previously from fever (malaria?), which stopped two or three days before coming to the cool depôt.

The man who had the attack of diarrhoea and the vomiting took an excess of Pulo "Khesari" (*Lathyrus sativus*), which brought on an attack of indigestion.

No untoward effect happened in the case of children and infants.

The work is still going on, and since 24th March, 1919, vaccination against small-pox is being done (2 points) on one arm and that against cholera on the other arm.

Technique.—The back and outer surface of the upper arm is generally selected by the writer for cholera inoculation unless the skin is very unhealthy (itches and other eruptions, ulcerations, etc.), when the left arm or even the forearm is selected.

The skin is first washed with hot water and germicidal soap (containing 20 per cent. of hydrarg. iodide) and then tincture iodine is applied. The vaccine is injected in the usual way by means of an all-glass hypodermic syringe sterilized by boiling. This is followed by application of a piece of boric cotton soaked in tincture benzoin on the site of puncture. The needle of the hypodermic syringe is sterilized by passing it

through the flame of a spirit lamp till it is red hot. It is then cooled, the syringe filled with the vaccine and the next injection given.

Instead of the ordinary needle of the hypodermic syringe, which is too thin and is liable to bend or break at the point, especially when a child struggles during injection, the writer uses the needle of small antitoxin syringes, which serve the purpose very well, especially when such large numbers of people are daily injected.

Dose.—For adults, $\frac{1}{2}$ c.c., as recommended by the Kasauli authorities; children, old persons or emaciated individuals,—proportionately modified for children and infants under 4—1 c.c. (the writer's dose.)

It is to be noted that from a trial of about 400 children and infants under 4 years of age by the writer, one can fairly assume that the new cholera vaccine of Kasauli is equally safe for them as for adults.

Conclusion.

The new cholera vaccine of Kasauli can be safely administered not only to weak, emaciated and old persons, but even to infants and children under 4 years of age as well as to pregnant and recently delivered women. There is absolutely no local and general reaction. It is contra-indicated when a person suffers from fever or bowel complaints. During the negative phase which follows all active immunisation, it is desirable to avoid indigestible, unwholesome food as this renders one liable to choleraic diarrhoea. It is indicated when an epidemic has broken or is about to break out in a locality or when a person is obliged to go to a place where the epidemic is raging. It is specially suited to India, amongst the illiterate masses—the dumb millions of India, who are quite ignorant of ordinary sanitary laws and cannot apply personal prophylaxis. The landholders and the educated community, the natural leaders of the masses, could easily train them by adopting these procedures themselves, which is the only way to overcome the prejudice of the illiterate people.

I may illustrate this by an example here. Only Sunday last (13-4-19) I went to Podma, the seat of the Ramgarh Raj (the premier zemindar of this district), where cholera is raging now, to inoculate a branch of the Raj family who are my regular patients. I was surprised to find that when the family took one injection, the servants one and all followed their master without any grudge and took the injection quite willingly. This will show how we can train the illiterate bulk of the people to overcome their prejudice. Without the co-operation of the leaders of the people, Government cannot do much in this direction, for every sanitary measure suggested by Government is looked on with suspicion by the ignorant public.

List of references :—

1. Sajous' Encyclopædia of Medicine and Surgery.
2. Forcheimer's System of Internal Therapeutics.
3. Manson's Tropical Disease.
4. Rogers' Cholera and its Treatment.
5. Tropical Diseases Bulletin.
6. Indian Journal of Medical Research.

Note.—The value of prophylactic inoculation is well brought out by the results amongst coolies in the Goalundo epidemic, where only one inoculated coolie died of the disease.

CALCULI OF THE URINARY TRACT AS SEEN IN A BRITISH GENERAL HOSPITAL IN INDIA.

By D. J. HARRIES, M.D., F.R.C.S. (Eng.).

CAPTAIN, R.A.M.C.,

Station Hospital, Ambala.

THERE seems to be a general belief in England that patients with calculi in the urinary tract are commonly encountered in the tropics, and especially in India.

It is true that in some parts of India calculi are frequently found in the natives, but this statement requires modification when the white population is under discussion. In the latter, calculi over half an inch in diameter are decidedly rare, whereas small calculi a quarter of an inch or less in diameter are very frequently encountered. Between June 1916 and December 1918, 19,020 patients were admitted into the 34th General Hospital for treatment, 1,455 of whom were submitted to operation. Of these only six had urinary calculi over $\frac{1}{2}$ " in diameter.

The first three were admitted in June 1918; the fourth in July 1918; the fifth in September 1918; and the sixth in December 1918.

The first case refused operation, but the other five were operated on and the calculi removed. I am not going to give a detailed account of these cases as I only wish to draw attention to the main points of interest here. A table is added at the end giving a few details. Hydronephrosis complicating renal calculi is said to be rare in England, but the last three cases operated on here showed a definite hydronephrosis, the kidney being over twice the normal in size, the pelvis and calyces considerably dilated and the kidney substance only $\frac{1}{8}$ "– $\frac{1}{4}$ " thick over some of the dilated calyces. In each of these three cases the calculus was pear-shaped, the body being situated in the lower part of the kidney pelvis, while the stalk projected into the upper end of the ureter. (plate No. 4).

The second case operated on also had a pear-shaped calculus in a similar position (plate No. 3) but the kidney and pelvis appeared normal

to the naked eye. The first case operated on had an irregular calculus, $\frac{1}{2}$ " in diameter, fixed in the inferior calyx in the lower pole of the kidney, and apparently it could not interfere with the pelvis or the ureter. The condition of the kidney in the case, which was not operated on, is not known, and even if we assume it to have been normal we still have 50 per cent of the cases showing definite hydronephrosis. In the first five cases the stone was on the right side, in the sixth it was on the left, but this patient had a stone $\frac{7}{8}$ " \times $\frac{3}{8}$ " in his right ureter, near the spine of the ischium, in addition to the one in the left kidney pelvis. Large calculi in the ureters must be very rare in this country as I have only seen one case with a calculus over $\frac{1}{4}$ " in diameter, *viz.*, the sixth case mentioned above).

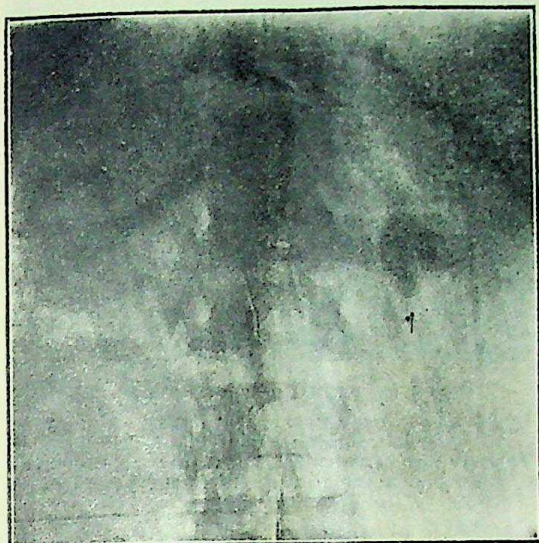
I have not seen a single case of vesical calculus over $\frac{1}{4}$ " in diameter in British patients in India.

When dealing with small calculi $\frac{1}{4}$ " or less in diameter we see an entirely different state of affairs. These are so common that it is exceptional for a month to pass without our having at least one case admitted suffering from symptoms due to their passage down the ureter. Most of these originate in the kidney, calyces or pelvis, but they seem to give rise to no symptoms until they reach the ureter, and are only accidentally discovered in the kidney. Their passage down the ureter gives rise to ordinary ureteral colic of varying severity; and as we have always X-rayed all cases of renal or ureteral colic we now possess numerous plates showing these small calculi in the ureters. They must pass very rapidly down into the pelvic portion of the ureter; as we have not succeeded in obtaining any plates showing them in the abdominal portion.

Obstruction to the passage of these calculi is first encountered near the spine of the ischium. Difficulty is also encountered at the commencement of the intramural portion of the ureter. Needless to say calculi in these two positions prevent the passage onwards of others coming down behind them, and we sometimes see a number lying in a row in the last 2" to 3" of the ureter. The last plates shown (Nos. 8, 9), illustrate clearly the above remarks. In this portion of the ureter the calculi sometimes remain for weeks or months without causing any symptoms and then pass onwards into the bladder, their passage giving rise to an attack of colic of a mild or severe type. They do not remain long in the bladder or the urethra, and, so far, we have not succeeded in obtaining plates showing any in these two positions. I have only met one patient who actually recovered a small calculus from his urine. He had been told to examine every drop of urine passed for a small calculus lodged in his ureter. otherwise I dare say, he would never have looked for it, as the passage of these calculi down the

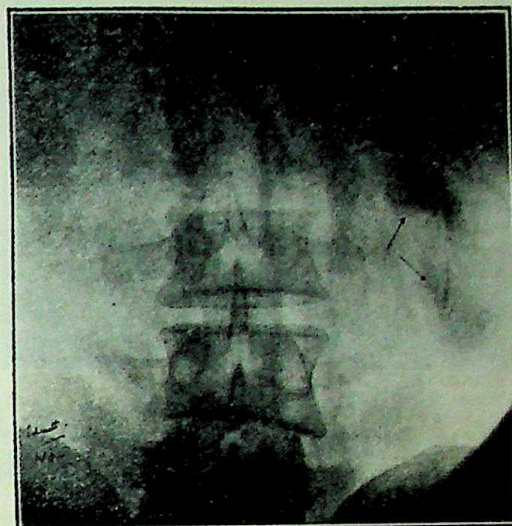
CALCULI OF THE URINARY TRACT AS SEEN IN A BRITISH GENERAL HOSPITAL IN INDIA.

BY CAPTAIN D. J. HARRIES, M.D., F.R.C.S. (Eng.), R.A.M.C.



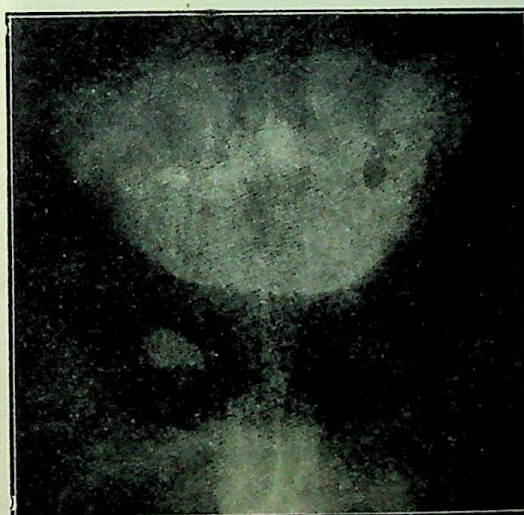
PRIVATE RUSTON. No. 3.

The calculus was removed on 12-7-18 by nephrotomy. No changes were found in the kidney or pelvis.



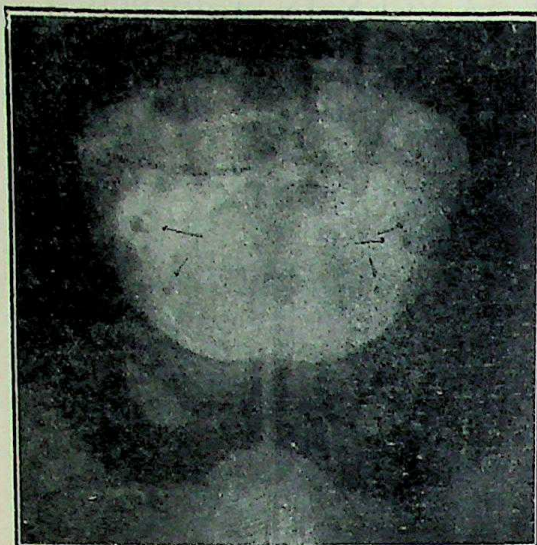
PRIVATE EDMETT. No. 4.

The calculus was removed on 15-8-18 by nephrotomy. Two shadows are shown. This was due to the respiratory movements. The kidney was hydronephrotic.



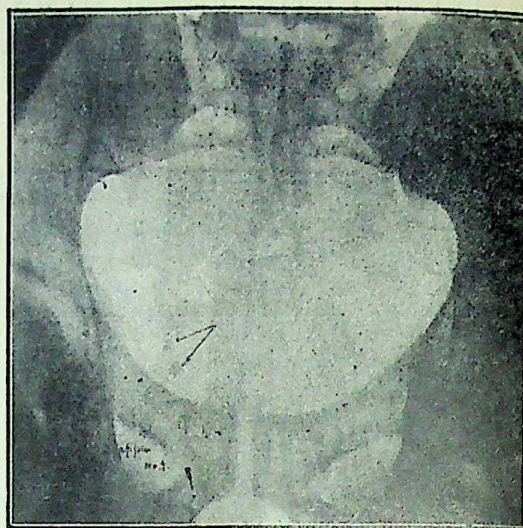
PRIVATE JONES. No. 6-B.

It shows a calculus $\frac{3}{4}$ " \times $\frac{3}{4}$ " in the right ureter. The calculus has been arrested in its passage down the ureter opposite the spine of the ischium.



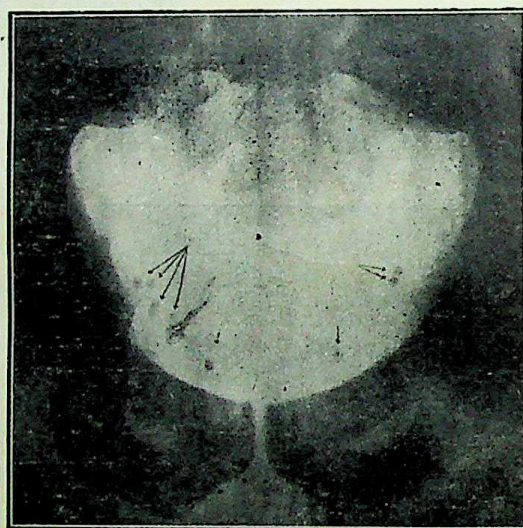
PRIVATE LANGTON. No. 7.

It shows two small calculi in the left ureter and three in the right, opposite the ischial spines. This is the commonest situation for the calculi to be arrested in their passage down the ureters.



PRIVATE PRICE. No. 8.

It shows two calculi in the right ureter and four in the left, opposite the ischial spines. There is also a calculus shown in each ureter at the commencement of the intramural portion.



PRIVATE MAPPEN. No. 9.

It shows two small calculi at the commencement of the intramural portion of the left ureter. The bladder outline is clearly seen in the position shown by the dotted line.

urethra seems to be unaccompanied by and symptoms. Looking over the books of the Ambala Brigade, I was interested to see that in the two years 1917-1918 there were no patients with urinary calculi over $\frac{1}{4}$ " in diameter admitted into hospital. During that period 398 major

operations were performed by my predecessor, but none of these were for urinary calculi.

In conclusion I wish to thank Captain T. J. Evans, 34th General Hospital, for taking the plates, and Private Beattie for preparing the prints used to illustrate this article.

Table showing the main points of interest in Captain Harries' six cases of Calculi.

No.	Name.	Date of admission.	Date of discharge.	Duration of symptoms prior to operation.	Skin incision employed.	Method employed for removing the calculus.	Number of days the kidney bed was drained after operation.	Duration of hæmaturia following the operation.	Number of days the incision took to heal, completely.	Nature and shape and size of the calculus.
1				This case was not operated on.						
2	Morgan ...	26-6-18 ...	7-9-18 ...	6 months ...	Oblique	Nephrotomy	1 day ...	7 days ...	7 days ...	Oxalate. Irregular. $\frac{1}{4}$ " in diameter. Urates with coating of phosphates. Pear shaped. $1\frac{1}{2} \times \frac{1}{4}$ ". Same as 3.
3	Rushton*	24-6-18 ...	7-9-18 ...	1 month ...	"	"	3 days ...	14 " ...	14 " ...	
4	Edmett*	23-7-18 ...	20-9-18 ...	1 $\frac{1}{2}$ " ...	"	Nephrotomy hydronephrosis present.	2 " ...	21 " ...	27 " ...	
5	Saul ...	17-9-18 ...	20-11-18 ...	3 months...	"	Post-pyelo-omy hydronephrosis present.	2 " ...	8 " ...	9 " ...	Do.
6	Jones ...	12-11-18 ...	Still in hospital.	5 " ...	"	Ant-pyelo-omy hydronephrosis present.	2 " ...	9 " ...	12 " ...	Do.

* Cases whose plates are reproduced.



Size and shape of the calculus in Nos. 3-6.

FISH POISONING IN THE PERSIAN GULF.

By C. C. KELLY,

LIEUTENANT, I.M.D.,

Belgaum.

In Koweit and other ports in the Persian Gulf a dark-brown nut, which is used as a fish poison, is imported from India and also grown in and around Basrah.

It is known in England as the "Indian berry" or fish poison. The Arabs name it "*zar ul simuk*," fish poison.

It is generally used in the hot months, April to October, the nut being well ground and mixed with soft crab shell, well crushed: or with fish oil imported from the Malabar Coast, and used for smearing the exterior of pearling and fishing boats.

When pearlers leave for Bahrein annually, about May, they take away large quantities of it, and

when they want to vary their diet, go near the shore and throw the mixture in shallow water, where it sinks to the bottom. In about half an hour, the poisoned fish come to the surface in a stupefied condition, and become frantic, performing all sorts of contortions, until they finally die, or are killed with sticks.

The fish generally so killed in large quantities are named—the "Mayeed," "Sheboom," "Yemem," and the "Abeayah."

The inhabitants in these parts eat the fish entire, but from Baghdad downwards, along both banks of the river, and in the swamps, the head is discarded, apparently the poison being more potent in that portion, or the poison being more active in fresh water.

The fish caught in the swamps are mostly by fishermen called "Birarberas," equivalent to our word "Barbarians."

They mix the nut with flour and a little tobacco, making it into a doughy mass and throw small pellets of it into the water. Well-to-do Arabs and Turks in Basrah and its environments make the fishermen swear that it is not poisoned fish they are selling, as it is hard to discriminate between it and stale fish, the flesh being flabby and the gills pale.

In winter the fish do not take kindly to the poison, so the Arabs do not make use of it in that season.

Cases have been known where porpoises and sharks have died and come to the surface after having eaten small poisoned fish, which have drifted into deep water with the tide.

From the description given in Lyon's Medical Jurisprudence, 2nd edition, 1889, the nut appears to be the "Cocculus Indicus," or Levant nut, the berries and fruit of the *Anamirta Cocculus*, N. O. *Menispermaceæ*; Kakmari (Hind.); Kakphul (Bombay).

These are highly poisonous, owing their activity to the presence of "Picrotoxin," a crystallisable, non-alkaloidal substance, contained in the seeds, but not in the pericarp of the fruit. Picrotoxin acts as a stimulant to the spinal cord, resulting in the production of epileptiform convulsions. The dose is infinitesimal, $\frac{1}{100}$ to $\frac{1}{25}$ th of a grain in pill, powder or hypodermically: the maximum dose is $\frac{1}{10}$ th grain daily.

The pericarp, in fact, is non-poisonous, and an entire berry might therefore possibly pass through the body without causing bad symptoms.

A few cases of poisoning by the berries have occurred in Europe and America; in one case, a child died from the application of an alcoholic tincture of the berries to the head. A decoction or extract of it has been used in England, as an adulterant of beer, porter, etc., in order to increase its intoxicating power, and it is said to be largely used for the same purpose by the liquor retailers in Bombay.

In England, it has been used by thieves to stupefy their victims in order to facilitate the commission of theft, and the Bombay Chemical Analyser's records show that it was detected in three cases of alleged cattle-poisoning.

Notwithstanding it being a powerful poison, it is regarded by the Arabs as harmless, the berries being freely handled by them, and sold in the bazaar, without any restrictions, from a rupee for four pounds, and in the pearling season the same amount for 3 to 4 rupees.

The "Sale of Poisons Act" (Bombay) restricts the sale of "Cocculus Indicus" (Act VIII of 1866, Schedule A), and prohibits its sale, unless sold by a licensed vendor and when dispensed as medicine on the order or prescription of a practitioner of medicine, and each sale must be entered with the purchaser's name and address in a book kept for the purpose.

Now that we have troops up the river, and as large quantities of fish are being eaten, especially by the sick and convalescent, it may be of advantage to the sanitary officers to know, whether any deleterious effects would result from eating such fish, and, if necessary, to restrict its importation; as it is difficult to discriminate between hooked, netted or poisoned fish when bought, and it may produce symptoms in Europeans unobservable in natives, as one never can explain these actions, the clever cloak of our ignorance being idiosyncrasy.

A Mirror of Hospital Practice.

GASTRECTASIS AND GASTRO-DUODENAL ULCERATION.

By ERNEST F. NEVE, M.D., F.R.C.S.E.,

Surgeon to the Kashmir Mission Hospital.

IN countries where rice is the staple diet, digestive disorders appear to be unusually common. This is partly due to the large amounts ingested. The actual food bulk is great. Half a pound to a pound may be consumed at one meal, and vegetables and other accessories may amount to half as much again. In rice the balance of starch (79.5 per cent and proteid (6.3 per cent) is unsatisfactory, and to satisfy the need for the latter, a great excess of the former is eaten, with the result that starch dyspepsia is too often engendered.

Certainly, from one cause or another, the number of cases seeking relief from digestive troubles in the out-patients' department of the Kashmir Mission Hospital is great, mounting up to several hundreds in the year. The more serious cases are admitted to the wards; and among these gastrectasis, with pyloric stenosis and with or without gastric ulcer is fairly common. Duodenal ulcer is also not infrequent. Mayo and Moynihan (1) have found that half their cases of duodenal ulcer were associated with gastric ulcer. Duodenal ulceration, when advanced, is particularly dangerous on account of the tendency to recurrent hæmorrhages, which, added to the enforced partial starvation, are apt to rapidly prove fatal.

Case I.—On Good Friday, 1918, I was called to see a Muhammedan gentleman in the city, who gave a history of tarry stools. There was marked epigastric tenderness. Four or five hours after meals the pain was very great. I arranged for operation on the following Monday. His friends, however, were unwilling. I heard subsequently that he died a few weeks later.

This experience is unfortunately only too common. The surgeon is not infrequently placed in a difficult position. A patient is brought in almost pulseless from repeated melæna; while endeavouring to build up his strength with a view to operation another hæmorrhage or

perforation may occur; or, as often happens, the patient is removed from our care and falls into the hands of *hakeems*. Careful discrimination is necessary in operating on enfeebled patients with advanced disease. The safe course in cases in which the symptoms point unmistakably to duodenal ulceration is to operate as soon as possible after the first tarry stool, when the patient is in fit condition.

The following cases are illustrative:—

Case 2.—S. N., a Hindu, *æt.* 40, clerk in a Government office had suffered for some years from indigestion. Intense pain comes on three or four hours after meals. There is definite tenderness on pressure over the duodenum. He gives a history of tarry stools. On Dec. 17th, 1917, I performed a posterior gastro-jejunostomy. The operation was easy. There was no subsequent rise of temperature. The pulse the same evening was 66. The patient made an uninterrupted recovery and has remained perfectly well since.

Case 3.—Q. D., Mussulman, *æt.* 40. Digestive trouble for five months. Severe cutting pain in the epigastrium, almost in the mid-line, two inches below the xiphisternum. Pain worse three or four hours after meals. There is a history of his having passed a tarry stool. On June 12th, 1918, I did a posterior short circuit operation from stomach to jejunum. The patient made a good recovery.

Most of our cases of gastrectasis were obstructive and due to pyloric stenosis. The hypertrophic form is not common. In two of my cases a movable swelling could, however, be felt in the region of the pylorus. Cancer of the stomach like other carcinomata is very rare in Kashmir. Acute dilatation is also uncommon. A recent review gives an account of 188 cases collected from available sources.(2)

The cases under our observation have been chronic, and cicatricial contraction has been the chief cause of dilatation.

The symptoms are unmistakable. Vomiting is always the most prominent indication. The evidence of fermentation and the presence of undigested food which had been eaten one or more days before are pathognomonic. The existence of ulceration is often at once revealed by material like coffee grounds or even fresh blood in the vomitus. Pain is invariably present, seldom immediately after taking food, although a feeling of heaviness is then felt. But in the great majority of cases, intense epigastric pain comes on three or four hours after meals. The relief obtained from vomiting is great. If emesis does not occur spontaneously, the patient has in many cases acquired the habit of inducing it. Dilatation of the stomach is usually very obvious. The splashing, which can be easily produced, the increased resonance and the effect of inflation (if not contra-indicated) form a well-

defined clinical picture. Visible slow gastric peristalsis may sometimes be induced by drawing a finger tip sharply across the lower left lateral costal region. Additional information may be obtained as to the stomach outline, the pyloric condition and sometimes even the localization of ulcers by X-ray examination after a barium meal.

The result too of the analysis of test meals is fairly constant. Although the absence of HCl is more characteristic of malignant disease, it is *sometimes* noticed in benign gastrectasis. In four of my cases free HCl was absent. As a general rule the total acidity is very high. Lactic acid is rarely found.

The following are brief notes of cases of dilated stomach with gastric ulceration:—

Case 4.—H. S., a Sikh, *æt.* 32, who had suffered from digestive trouble for seven years, was admitted on June 7th, 1918. He complained of constant vomiting. There was a history of hæmatemesis. The stomach was not greatly enlarged. On June 7th I performed a gastro-jejunostomy. The patient made an excellent recovery. His pulse-rate never rose above 76 and he had no rise of temperature.

Case 5.—S., a Muhammedan, *æt.* 25, admitted June 1st, 1918, has had stomach trouble for a year. He complains of intense pain in the epigastrium, much worse with a full stomach and relieved by vomiting. The vomitus is highly acid and contains undigested food and blood. Pressure two inches below the xiphisternum in the mid-line causes severe pain. The patient is anæmic and emaciated. On June 6th posterior gastro-jejunostomy was performed. The patient was dismissed on June 26th convalescent and rapidly putting on weight.

Case 6.—S., a Sikh, *æt.* 33, had suffered much from indigestion for six months. He was admitted on June 1st, 1918, with a history of severe epigastric pain three or four hours after meals; relieved by vomiting. The vomitus contains undigested food and blood, like coffee grounds. The stomach is dilated. On deep pressure there is definite epigastric pain. On June 8th I performed a posterior gastro-enterostomy. The stomach was much bound down by adhesions. The patient made a good recovery in spite of an intercurrent attack of bronchitis, which lasted for a week.

Case 7.—J. M., Mussulman, *æt.* 50, admitted Nov. 12th, 1917. History of eight years' digestive trouble. Stomach much dilated. Vomitus contains dark blood and undigested food. On Nov. 23rd I operated and found very marked gastroptosis. After a posterior gastro-enterostomy, the patient made an uneventful recovery.

Case 8.—F. D., a Muhammedan female, *æt.* 30. Duration of illness one year; is anæmic. Temperature sub-normal, pulse over 100.

Vomiting. Much pain some time after meals. Vomitus contains undigested food and dark blood. Stomach greatly dilated to below umbilicus. Splashing easily elicited. Treatment with lavage and careful diet from Jan. 31st, 1917, to Feb. 14th. No improvement. Gastro-jejunostomy then performed. On evening of second day the temperature rose to 101°F. There was no remission. On the fourth day the temperature reached 103.2°F. There was no evidence of peritonitis and no obvious local complication. This may have been a case of malignant ulcer. The patient succumbed on the fifth day. Unfortunately no *post-mortem* examination was possible. This was the only fatality in sixteen operations performed by me in 1917-18. The operation mortality was therefore 6.21 per cent.

In cases presenting dilatation of the stomach, but *without* symptoms of gastric or duodenal ulceration, the history is of much importance. Chronic cases which have been going on for months or years will very rarely be cured without operation. In many there will be a history showing that the pyloric stenosis is probably due to cicatricial contraction from former ulcers. The following are illustrative cases:—

Case 9.—S. R., Hindu, *æt.* 35. Gastric trouble of 15 years' duration. Stomach greatly dilated, lower margin well below umbilicus. Constant vomiting. Food undigested. I performed a posterior gastro-jejunostomy on August 21st, 1917. He made an excellent recovery. But for five days there was an evening rise of temperature to 100 and 101°F.

Case 10.—H. A., Muhammedan, *æt.* 30, had suffered for a year. There was a history of syphilis, and we thought it to be probably a case of pyloric stenosis from cicatricial contraction. The symptoms were typical of gastrectasis. On operating on August 23rd, 1918, I found the stomach surrounded by adhesions. There was some ascites. Posterior gastro-enterostomy was performed. The patient recovered without any complication.

Case 11.—N., Mussulman, *æt.* 16. Duration of illness one year. Stomach much dilated. Apparently the cause was a tubercular ulcer which had healed with resulting cicatricial stenosis. A caseating tubercular gland was found close by. The usual posterior anastomosis to the jejunum gave complete relief.

Six other cases of obstructive gastrectasis of the same type made a good recovery after operation and were restored to good health.

With regard to the actual method of operation. It is well to make the stomach incision longer than that in the jejunum. The latter being more flaccid, accurate coaptation of the opening is thus ensured. A recent writer(3) has drawn attention to the comparative frequency of

jejunal ulceration as an end result of gastro-enterostomy. It is thought that this may occur in as many as 1.5 per cent. of the cases. The use of continuous silk sutures does probably predispose to this dangerous sequela. For this reason it is probably wise to follow the practice of the Mayo brothers and use a continuous catgut stitch as the hæmostatic suture and interrupted silk stitches for the outer layer. Those surgeons also advise that the meso-colon be sutured to the stomach well away from the line of anastomosis, so that, if a jejunal ulcer should occur, it may be more accessible.

REFERENCES.

- (1) Doolin, *Brit. Journ. of Surgery*, Vol. VI, p. 125.
- (2) Osler's System, Vol. III, p. 344.
- (3) Wright, *Brit. Journ. of Surgery*, Vol. VI, p. 398.

NOTES OF LEPROSY CASES TREATED BY SUBCUTANEOUS AND INTRAVENOUS INJECTIONS OF SODIUM MORRHUATE.

By SIR LEONARD ROGERS, M.D., F.R.C.P., F.R.C.S., F.R.S.,
LIEUT. COLONEL, I.M.S.

(Continued from page 171.)

CASE 1.

HINDU female, aged 22, with anæsthetic leprosy of six years' duration. Extensive light coloured partially anæsthetic areas on right arm and leg.

Treatment and Progress.—Begun 23-3-1918 with $\frac{1}{2}$ to $1\frac{1}{4}$ c.c. doses of the 3 per cent solution of sodium morrhuate subcutaneously. No reactions, but steady improvement with regain of the normal colour of the skin and great improvement in the sensation. On July 23rd she stopped treatment as she considered herself to be quite well and has not been seen since.

CASE 2.

Hindu male, aged 32, with tubercular leprosy of six years' duration. Leonine face with ear nodules containing numerous lepra bacilli and raised discoloured macules all over the body.

Treatment and Progress.—Begun 18-5-1918 with subcutaneous injections of sodium morrhuate in doses of from $\frac{1}{2}$ c.c. to $1\frac{3}{4}$ c.c. Slight febrile reaction, followed by diminution of lesions, softening of the nodules and fading of the discoloured areas. He attended irregularly for four months only, and the lesions increased again whenever he stopped treatment. On 6th September a few acid-fast bacilli could still be found and he has not returned since.

CASE 3.

Mahommedan male, aged 46, with anæsthetic leprosy of one year's duration. Left ulnar and peroneal nerves thickened with light coloured areas in their distribution, with loss of tactile and thermal sensation.

Treatment and Progress.—Begun 5-7-1918 with $\frac{1}{2}$ to $1\frac{1}{2}$ c.c. doses of sodium morrhuate subcutaneously. No reaction, but steady improvement with diminution in the thickening of the nerves, improved sensation and appearance of the patches. He stopped attendance after four months, being fully satisfied with his condition, although it can only be said to have considerably improved.

CASE 4.

Hindu male, aged 50, with anæsthetic leprosy of six months' duration. Left ulnar nerve much thickened with tingling and diminished sensation in its distribution and wasting of the muscles of the hand.

Treatment and Progress.—Begun 25-9-1918 with subcutaneous injections of sodium morrhuate from $\frac{1}{2}$ to $1\frac{1}{2}$ c.c. doses. Temperature reaction after the larger dose followed by improvement in sensation. He continued the injections for 5 months, at the end of which the ulnar nerve had appreciably diminished in size, the tingling sensation had ceased, while his general health had improved. He had also regained the lost strength of his hand and, being able to resume his work, he ceased treatment and has not been seen since.

CASE 5.

Hindu female, aged 25, with nodular leprosy of one year's duration. Typical nodules on face and ears and many small ones on the extremities with numerous lepra bacilli in them. Partially anæsthetic areas on the legs.

Treatment and Progress.—Begun 16-4-1918 with subcutaneous injections of sodium morrhuate in doses gradually increased from $\frac{1}{2}$ to $1\frac{1}{2}$ c.c. No marked reaction, but the nodules became softer and sensation was regained in the affected patches, while her general health improved. After five months she ceased treatment and has not been seen since.

CASE 6.

Indian Christian male, aged 25, with anæsthetic leprosy of seven months' duration. Left ulnar nerve considerably thickened with loss of tactile and thermic sensation, wasting of hypothenar muscles and contracture of little and ring fingers. Also anæsthetic areas on left leg.

Treatment and Progress.—Begun 20-8-1918 with sodium morrhuate intravenously in doses of from $\frac{1}{2}$ to 2 c.c. Only slight febrile reaction. At the present time, after five and a half months, he has lost the contracture of the fingers and regained power over them, but there is only slight improvement in the anæsthesia, while the ulnar nerve is less thickened. He is continuing treatment.

CASE 7.

Hindu male, aged 54, with nodulo-anæsthetic leprosy of ten years' duration. Leonine appearance and nodules in the ears with numerous lepra bacilli and macules on the body. Partial contracture of the fingers, swelling of the feet with a perforating ulcer.

Treatment and Progress.—Begun 25-4-1918 with sodium morrhuate subcutaneously in doses of from $\frac{1}{2}$ to $1\frac{1}{2}$ c.c. weekly, as he lived at a distance, and had a slight febrile reaction after the second one. At the end of a month the perforating ulcer had healed and the macular patches had considerably diminished and he felt stronger. In August he had another reaction followed by considerable improvement, but in the middle of October he ceased to come.

CASE 8.

Hindu male, aged 30, with anæsthetic leprosy of only three months' duration. Small slightly discoloured and partially anæsthetic areas on face, body and extremities. Nerves not thickened.

Treatment and Progress.—Begun 13-8-1918 with $\frac{1}{2}$ gradually increased to $1\frac{1}{2}$ c.c. intravenously without any reaction occurring. He continued the injections for six months, at the end of which the patches had almost disappeared and he ceased attending.

CASE 9.

Hindu male, aged 16, with nodulo-anæsthetic leprosy of six years' duration. Thickened and discoloured areas containing many acid-fast bacilli on face and ears. Several anæsthetic areas over body, thickening of skin of extremities and swelling of fingers and toes.

Treatment and Progress.—Begun 16-8-1918 with subcutaneous injections of from $\frac{1}{2}$ to 2 c.c. sodium morrhuate twice a week. In middle of September had a high febrile reaction and remained away for a month, at the end of which period he was much reduced, but the lesions on the face had faded away. Injections of $1\frac{1}{2}$ c.c. were continued and late in January his general health had greatly improved, the patches on the body were fading and did not show any acid-fast bacilli and the swelling of the fingers and toes was much reduced. He continues treatment.

CASE 10.

Hindu male, aged 26, with nodulo-anæsthetic leprosy of two years' duration. Thickened patches on face and ears containing numerous lepra bacilli and ulceration in the nose with acid-fast bacilli in the nasal mucus. Ulnar nerves thickened. Macular patches on body.

Treatment and Progress.—Begun 13-9-1918 with subcutaneous injections of from 1 to 2 c.c. sodium morrhuate twice weekly. After third injection a febrile reaction for a day with some increase of the lesions, but after two weeks' interval considerable improvement was noticed. On 8-11-1918 a few acid-fast bacilli, some granular, were found. After six months many of the lesions, including the nasal ulceration, had disappeared. He is continuing treatment.

CASE 11.

Hindu male, aged 42, with very extensive macular leprosy as shown in the coloured plate, of six years' duration. Numerous lepra bacilli found.

Treatment and Progress.—Begun 14-6-1918 with sodium morrhuate subcutaneously in doses gradually increased from $\frac{1}{2}$ to 2 c.c. and given twice a week. At the end of two months the lesions had faded to bluish discolorations with very little remaining thickening. He now had an attack of influenza and went to his country for two months, during which he had no injections. On his return nothing but whitish discoloration at the sites of the old thickened red patches remained as shown in the plate and no bacilli could be found in pieces cut out for microscopical examination. He was also syphilitic and a formerly 100 per cent Wassermann reaction had become reduced to a 50 per cent one without any other treatment. This is the most remarkable improvement in the time which I have seen in extensive leprosy under any treatment.

CASE 12.

European male, aged 37, with nodular leprosy of fourteen years' duration. Extensive reddish thickened areas over the face and ears producing a leonine appearance and nodules in the ears containing numerous lepra bacilli, ulceration in the nose and numerous macular patches over the body.

Treatment and Progress.—Begun 14-5-1918 with 1 to 2 c.c. doses of sodium morrhuate subcutaneously twice a week. Slight febrile and local reaction after third injection followed by improvement. After three months the redness of the face was greatly diminished and the ear nodules softened. The body macules had greatly faded and some disappeared and his general health had much improved. He has now been under treatment for nine months and the improvement has continued but a few broken-down bacilli can still be found in the ear nodules, although his face is nearly clear: a very great

improvement having resulted in a severe and advanced case.

CASE 13.

Hindu male, aged 10, with nodular leprosy of two years' duration. Numerous hard nodules over face and ears containing many lepra bacilli. Ulceration in nose with lepra bacilli in mucus. Contracture of fingers of right hand and swelling of feet.

Treatment and Progress.—Begun 12-3-1918 with $\frac{1}{2}$ to 1 c.c. of sodium morrhuate subcutaneously twice a week. Slight fever after second injection followed by improvement. No further reaction occurred and slow improvement continued and at the end of eleven months the lesions of the face had nearly cleared up, softened nodules remained in the ears containing some acid-fast bacilli mostly broken down, the ulcers in the nose had healed and his general health had improved, but his feet remained swollen owing to secondary staphylococcus infection, often seen in late cases of leprosy.

CASE 14.

Hindu female, aged 22, with maculo-anæsthetic leprosy of three years' duration. A number of raised coppery macules on face, body and extremities and extensive discoloured partially anæsthetic areas on legs with a perforating ulcer on right foot. Lepra bacilli found in nasal discharge.

Treatment and Progress.—Begun 12-2-1918 with from $\frac{1}{2}$ to $1\frac{1}{4}$ c.c. sodium morrhuate subcutaneously, only the smaller dose being given during the first two months as it produced increased burning sensation in the fingers. In two months the perforating ulcer had healed, the raised patches were fading, sensation and power in the fingers were returning and the burning sensation had gone. She continued to attend irregularly and the improvement continued, while the nasal mucus became free from bacilli.

Dosage of Sodium Morrhuate.—This drug even subcutaneously may produce slight and beneficial febrile and local reactions in small doses, so only $\frac{1}{2}$ c. c. should be given at first and increased by $\frac{1}{4}$ c. c. or four minims, at a time and the injections given twice a week. When a dose of over 2 c. c. is reached, once in five to seven days will suffice, while it is not necessary to increase the doses beyond 3 to 4 c. c. If pain is caused by the larger doses the drug may be given intravenously, starting again with $\frac{1}{2}$ c. c. and increasing as before. As the subcutaneous use of this drug is a simpler and more rapid procedure than giving intravenous injections of sodium hydnocarpate, the new treatment will be very convenient for out-patient hospital work and in leper asylums with many cases but a small medical staff. If obtained in powder form from which sterile carbolyzed solution is made up in small rubber-capped bottles or flasks, it is very cheap, not costing more than about a penny per case per month: an important consideration in India and many other tropical countries. I hope, therefore, that the discovery of the value of sodium morrhuate subcutaneously in leprosy will lead to a great extension of the new treatment in the comparatively early cases seen in hospital out-patient practice. If in this way numerous cases can be presented

from going on to the more advanced stages and their infections can be greatly reduced by the destruction of the bacilli in their lesions and nasal discharges, as has been shown to occur in many of the cases recorded in this paper, then an important step will have been taken in limiting the further spread of this terrible and much dreaded disease.

Conclusions.—The most active constituent of both taraxogenos and hydnocarpus oils appears to be hydnocarpic acid, which can be obtained more easily and abundantly from the latter variety. The preparation which has been issued under the name gynocardate of soda should therefore more correctly be termed hydnocarpate of soda, as in this paper.

2. Further experience has confirmed my previous conclusion that intravenous injections of sodium hydnocarpate nearly constantly leads to great improvement and frequently to complete disappearance of the visible lesions of leprosy. Either less frequent injections or oral administration must be continued for a long time if relapses are to be prevented, and it is still much too early to say if the highly resistant acid-fast lepra bacilli can be completely eliminated from the system and actual cure obtained. The infectiousness of the disease is doubtless much diminished through the education or actual disappearance of the bacilli from the tissues and from the nasal discharge and the progress of the disease is checked.

3. Sodium morrhuate prepared from cod-liver oil is also of value in leprosy and has the great advantage of being effective by the simple and rapid subcutaneous method, and may thus be readily used in private and out-patient hospital practice. This further discovery makes it highly probable that other unsaturated fatty acids will be found to be of use in leprosy, and possibly in many other bacterial diseases, and thus open out a vast new field of medical research.

UNIQUE CASE OF ELEPHANTIASIS IN THE FEMALE.

BY LT.-COL. R. BRYSON, F.R.C.S.E.,

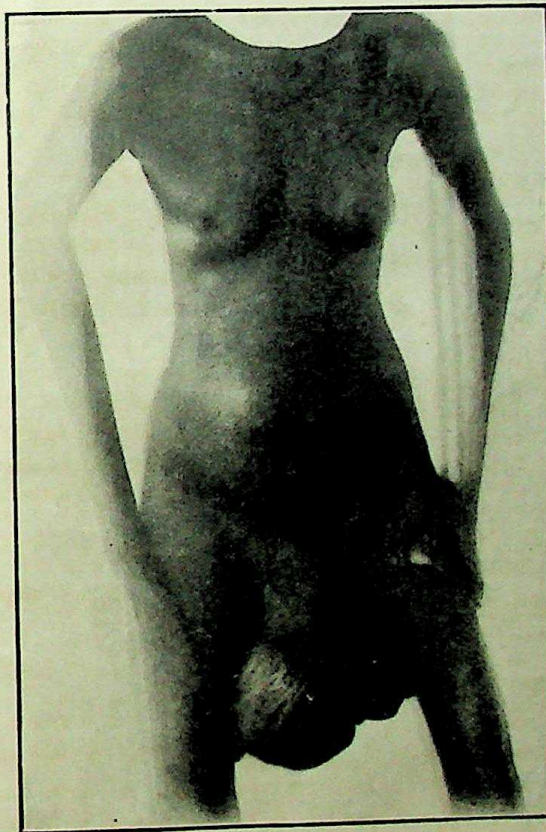
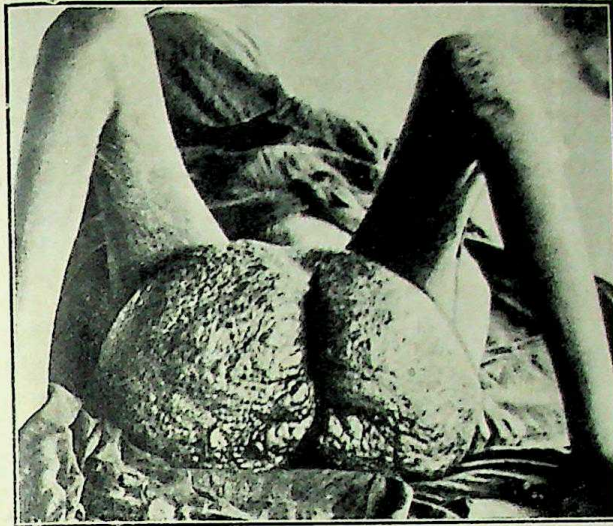
Royapuram, Madras.

THE accompanying photographs show that the case it refers to is probably a record for elephantiasis in a female. She was admitted into the Royapuram Hospital, suffering from anæmia and sepsis, the lower part of the tumour ulcerated and eczematous. Clitoris and urethra felt quite easily. The growth was said to be of 10 years' duration.

The woman was aged about 40 years: she had menstruated fairly regularly, and had borne three children, the youngest four years of

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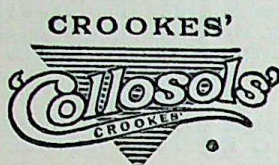
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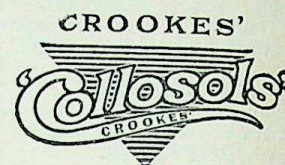
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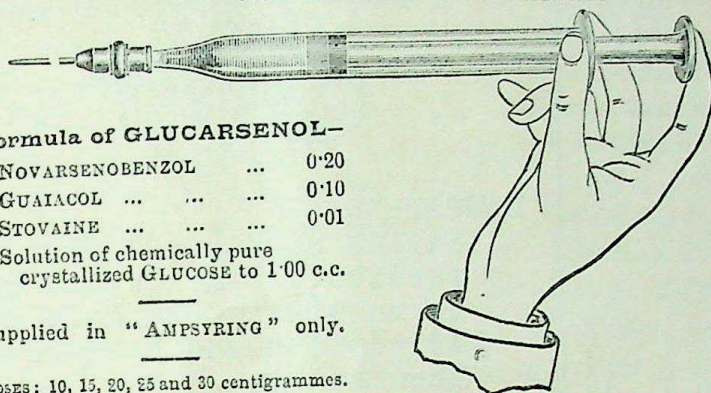
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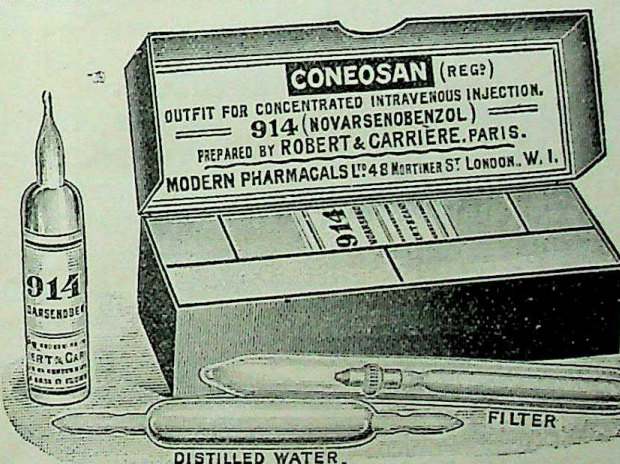
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Indian Medical Gazette

JUNE.

THE HISTORY OF INFLUENZA.

THERE is a very widespread feeling, both amongst the laity and the medical profession, that the present epidemic differs from previous visitations and that it is not a true influenza at all. Many times we have heard hard-worked practitioners affirm their belief that it was more like plague than influenza.

As Dr. Jack in a most interesting note on the history of influenza emphasizes, the general opinion held is that it is something new. If the findings recently described by Rose-Bradford and his colleagues are confirmed, the disease, as we see it to-day, is something new and the cause quite different from that of ordinary influenza.

In the early days of the disease, the Italian Buoninsegni, in 1580, attributed the condition to *una influenza di freddo* (an influence of cold), and from that source the English word passed into use for the first time in 1743, being first employed by Sir John Pringle—the founder of modern military medicine—and later adopted by the Germans, who, even in those early days, exhibited the same *taking little ways* which have made them notorious in medical and scientific matters.

Dr. Jack points out that practically every new epidemic of influenza has been regarded as a "new disease." In 1558 it was "the new burning ague," in 1562 "the new acquaintance," at various times in the seventeenth century "the new disease," "the new ague," "the new delight." The idea of novelty in this epidemic is therefore not itself new, and the reason for the claim of novelty in most previous visitations is probably that between the great epidemic and pandemic attacks there is usually an interval of a number of years sufficient for the features of the last attack to have passed out of common recollection.

From 1510 onwards pandemic outbreaks, involving now the Eastern, now the Western hemisphere, and sometimes the whole world, succeeded each other with great frequency. Hirsch enumerates fifteen affecting Europe mainly, but sometimes extending to America. They were

characterised by very great morbidity but low mortality, except where bleeding was extensively practised—as in Rome where 9,000, who were bled, died. In the unbled the mortality was low.

Dr. Jack attempts to show that the idea of there being something new about the present epidemic is not justified. He states that all the most striking symptoms of the present influenza have also appeared in the symptomatology of past outbreaks, and that the present death-rates, high though they have been, were equalled and even overtopped in the past. This article was written by Dr. Jack before the discovery announced by Rose-Bradford. The isolation of the influenza bacillus in 1892 by Pfeiffer was regarded as the last word in causation of the disease up to the present pandemic outbreak. The very severity of the disease, its high death-rate, the great numbers of cases of a septic type of broncho-pneumonia, has led a good many to doubt the Pfeiffer bacillus as being the only or perhaps the chief cause. This has stimulated research, and if the recent announcement that not only the cause of influenza but also that of measles, German measles, typhus, and trench nephritis have all been discovered, the present epidemic will not have spent its force in vain.

DR. CHARLES LLOYD.

LIEUTENANT-COLONEL D. G. CRAWFORD sends the following interesting account of the adventures of Dr. Charles Lloyd :—

Dr. Charles Lloyd, or Loyd, the subject of the following note, was a medical man, of Welsh descent, who served under Haidar Ali, King of Maisur, for some four years, 1777–1781. Little appears to be known about him. In the preface to my *History of the Indian Medical Service* (p. x) I wrote :

"Who was Dr. Lloyd, the English, or perhaps more probably Welsh surgeon, who was serving under Haidar Ali against his countrymen in the second Maisur war? How did he get into that position, and what became of him afterwards?"

In chapter II of the *History*, page 10, I quoted two brief references to Dr. Lloyd, all that I had been able to ascertain about him. The first was taken from a work, published anonymously in 1788, entitled *Memoirs of the War in Asia, from 1780 to 1784; including a Narrative of the Imprisonment and Sufferings of our Officers and Soldiers, by an officer of Colonel Baillie's Detachment.*

Colonel Wilson, in his *History of the Madras Army* (vol. II, p. 130), states that, from internal evidence, the work appears to have been written by Lieutenant Alexander Read, A.D.C., to Colonel Baillie. On page 20 the author states that on 12th September, 1780, the prisoners met an English surgeon, a Dr. Lloyd, formerly of Madras, who gave them some help.

"At this time Lieutenant Bowser saw Dr. Lloyd, whom he had formerly known at Madras, coming out of Hyder's tent. He instantly requested one of the guards to call the Doctor, and, after making himself known to him, begged that he would obtain an order that his small party might be sent to Colonel Baillie and the other officers. With this request the Doctor complied, without the smallest delay."

Dr. Lloyd is also mentioned in the *India Gazette, or Calcutta Public Advertiser* of 31st March, 1781, which quotes an extract from a letter, dated 6th March, 1781, from Kadalur or Cuddalore.

"There is a Dr. Lloyd come over to us from Hyder's camp, who informs us that Hyder is very much distressed for provisions and stores of every sort, and that his fighting men do not exceed ten thousand."

I have since come across an obituary notice of this Dr. Lloyd, in the *Madras Courier* of Tuesday, 11th April, 1815, which gives a fairly full account of his life, and answers the two above questions.

1st April—Suddenly, at his house, in Black-Town, Charles Loyd, Esq., M.D., in the 91st year of his age. In compliance with his last request, that he shall be buried as a Mason, all the lodges in the neighbourhood were convened, and met at his house in the evening,—and under their immediate direction, in Masonic procession, decorated with their badges, etc., funeral rites were conducted, with great decorum and solemnity, from Black-Town to the burial ground, attended by a numerous concourse of other respectable friends, to many of whom the deceased had endeared himself by innumerable acts of benevolent attention, professional as well as otherwise.

Dr. Loyd was a Hanoverian by birth (his father having been sent over as Commissary-General by George the 2nd) descended from an ancient Welsh family, and until a few hours before his death had never been seriously indisposed, and was always found ready to administer relief to the needy and helpless. He arrived in Madras in 1772, and whilst on his intended journey overland in 1777, he was stopt at Calicut by order from Hyder Ally, and being conveyed to Seringapatam, was forced into his service, and for several years filled the situation of Physician General and Secretary to that Prince; in which capacities he had many opportunities of affording relief to the unfortunate prisoners taken by Hyder, particularly after the defeat of Colonel

Baillie. In 1781, he contrived to effect his escape from Hyder's camp, and joined Sir Eyre Coote, at Cuddalore, to whom he rendered every * important services, and continued to enjoy the particular confidence of that renowned General, until his death. Dr. Loyd's memoirs of his own life, containing some very interesting accounts of Hyder's policy and character are now in the Press in London, and may be expected out by the first arrivals.

Dr. Lloyd's experiences would have formed material for a most interesting book. No one who knew Haidar Ali so intimately as he must have done has left an account of the King of Maisur. Unfortunately, it appears that this work was never written, or at least never published. No book by Dr. Charles Lloyd or Loyd appears in the catalogue of the British Museum Library, and nothing is known by the library officials of the existence of any such work.

Current Topics.

INFLUENZA IN THE PUNJAB.

THE Province in addition to a failure of the 1918 monsoon, which caused extensive failure of the autumn crop and severe scarcity of fodder, has suffered from a terrible visitation of virulent influenza.

Outbreaks of influenza occurred throughout the Punjab in August; but the nature of the disease was so mild and apparently trivial, with no increase of mortality, that it attracted little or no attention among either the medical profession or the laity. Those attacked recovered rapidly without complications or sequelæ. It was, no doubt, introduced by immigrants, both civil and military, from Bombay and Karachi, and subsided by the end of the month. A second wave of the epidemic appeared first in the South-Western Districts of the Province in the first half of September, Multan and Dera Ghazi Khan reporting localised outbreaks of severe type with a high mortality. By the first week in October the epidemic was general throughout the Province; and reached its maximum intensity in the fourth week, the peak of the epidemic being in most places about the 28th October, from which date it began to decline with almost dramatic rapidity. By the 10th November in nearly every district fresh cases ceased to occur, but an aftermath in the form of mortality among old cases continued until the end of November, when the disease was finally extinct. The Kangra District offers a notable exception to the general course of the epidemic in that in certain areas the intensity

* Every, probably a misprint for very.

appears to have been delayed. For instance, the dispensary at Banjar showed the greatest number of admissions on the 7th December: and reports from Kulu mention that the maximum intensity was delayed until the 4th November. In most places the virulence rapidly declined during the first week in December. By the 25th of the month the disease had disappeared from the greater part of the valley, while by the end of November it had ceased in the tahsils of Nurpur and Palampur. Dharamsala was not free until the 1st January, 1919, and the disease lingered later in Kulu.

The incidence of the disease would, however, appear to have been less in some localities off the line of railway, and in villages off the beaten track; and in urban compared with rural areas due, it may be assumed, in the former case to lack of facilities for communication with the outside world, and in the latter to the better sanitary conditions existing in towns, where the general population is better clothed, fed and housed than in villages.

No grade of society proved immune to the disease, which observed neither racial nor sex distinction. Europeans and Indians, Muhammadans and Hindus, were attacked alike. Naturally, compared with the well-to-do, the poor suffered more intensely, and among them the case mortality was higher, due to their less favourable environments and to the fact that they were less well nourished, clothed and tended. For the same reasons case mortality was greater in rural areas than in towns. The age incidence shows that mortality was greatest among persons between 20 and 40 and that women suffered more than men. The latter fact may be accounted for by the indoor existence spent by most women in India.

It is estimated that the epidemic caused over 800,000 deaths in the months of October and November.

DEATH CERTIFICATES

The following samples of the causes of death have been actually returned on the official certificates in Scotland. They are published in the *Journal of the Caledonian Medical Society*:—

- "Shock—the result of hand labour."
- "Senile decay—6 years, 5 months, 22 days."
- "Inward convulsions."
- "Probably decapitation."
- "Intestinal hydrocephalus."
- "Natural causes or results."
- "Asthenia during life."
- "Cerebral enteritis."
- "Phthisis—the outcome of a cut accident."—

Medical Press and Circular.

THE ROLE OF THE APPENDIX.

FROM the X-ray investigations of Dr. Spriggs and Mr. Marxers, after a barium meal, on the

vermiform appendix under different conditions, it would appear likely that the usually accepted opinion that it is a useless and dangerous appendage will require to be considerably modified.

They show that it is very active during digestion, rhythmically filling itself from and emptying itself into the bowel.

Even when food and faecal matter are absent from the caecum the appendix may go on contracting and may thus discharge some secretion into the bowel.

TREATMENT OF PYLORIC STENOSIS.

LEAVING aside surgical methods the treatment of this troublesome affection is very difficult; seldom do two cases react in the same manner to the same line of treatment. One case that came under observation not long ago, after deriving no benefit from lavage and careful feeding, etc., improved in the most marked manner when the method of feeding and type of food were altered. All starch and farinaceous foods were prohibited; the child was put on small feeds, beginning with a couple of teaspoonfuls of soup, extracts, milk, raw meat juice, etc. At the same time an acid mixture was administered after every feed.

The child at once began to recover and in a few weeks gained weight and strength. Years afterwards the child came under observation and was found to be seemingly of normal development and weight.

In contradistinction to this method we have advocated the feeding of children suffering from pyloric stenosis by thick farina—a starch-containing cereal. Its usefulness is said to be due to the fact that the thickness of the mixture prevents regurgitation and gradually overcomes the spasm of the pylorus. In eleven of the twelve cases the vomiting stopped shortly after this diet was adopted. One disadvantage is that extreme constipation accompanies it and is extremely difficult to obviate.

INFLUENZA: DIAGNOSTIC SIGNS.

Jour. Amer. Med. Assoc., 1918, 71, 1935; December 7.—Thomas F. Reilly gives the following three signs as being of value in the diagnosis of unusual cases of influenza where the absence of early rise of temperature and pulse and respiratory changes make diagnosis difficult.

(1) In a large number of true cases of influenza of the respiratory tract there is very marked redness of the opening of the salivary duct just opposite the second molar tooth. The punctum is usually swollen and raised above the level of the cheek and the red spot is seen in the centre.

It may easily be inspected by placing a spoon handle in the side of the mouth and retracting it.

(2) The presence of fine crackles at both bases of the lungs posteriorly, near the vertebrae, is—with some exceptions—*prima facie* evidence of influenza in a case where there is history of an acute onset.

(3) After the disease has spent itself, frequently a cough closely resembling whooping cough persists. In these cases redness over the arches of the palate—varying from $\frac{1}{3}$ to $\frac{1}{4}$ inch in width, and sometimes extending to form a complete arch—will nearly always be found.—*The Prescriber*.

DAKIN'S SOLUTION: A NEW FORMULA.

THE accepted formula for Dakin's solution (see *Prescriber*, August, p. 137) consists of chlorinated lime, sodium carbonate, sodium bicarbonate, and water. The lime is mixed with water and allowed to settle; the sodium salts are dissolved separately in another quantity of water and the solution added to the lime suspension; the precipitated calcium carbonate is allowed to settle, and the clear fluid siphoned off.

Notwithstanding the fact that in this formula the chlorinated lime has first to be titrated to ascertain the percentage of available chlorine, and the quantity of sodium salts adjusted according to this percentage, C. Pagel (*Bull. des Sc. Pharm.*, 1918, 25, 263; September-October) considers that this solution is too alkaline, and he recommends the following modification:—

Mix the required quantity of chlorinated lime with the water, and filter off the clear liquor. Dissolve the sodium carbonate separately in water and mix the solutions. Filter off the precipitated calcium carbonate, wash, and treat the precipitate with hydrochloric acid to form a solution of calcium chloride. The solution of sodium hypochlorite is then exactly neutralized with the calcium chloride solution. The product, he says, contains 0.5 to 0.6 per cent. of active chlorine, and is very stable. It has given great satisfaction in the hospitals in which it has been used.—*The Prescriber*.

TREATMENT OF COLON BACILLUS INFECTIONS OF THE KIDNEY AND BLADDER.

GRANVILLE MACGOWAN (*Jour. Amer. Med. Assoc.*) discusses the above problem in a most interesting manner. He has observed that persisting and unyielding coli infections are invariably due to colonic stasis of the faecal current. This interruption is usually in the caecum and is due to adhesions of this organ to the surrounding structures. From the stasis thereby induced a constant stream of colon bacilli enter the circulation through the lymphatics in the kidney capsule or by the blood stream and primarily infect the kidney pelves.

Once the infection is established it is practically incurable until a normal condition in the large intestines is restored by surgical means.

The author gives details of two very severe cases of coli infection where cure followed laparotomy and freeing of adhesions.

THYROID TREATMENT OF DOUBLE UNDESCENDED TESTES.

H. G. ARMSTRONG (*Guy's Hospital Gazette*, p. 271).—During the last seven years, out of about 1,000 boys examined on entry at Wellington College, seven were found with complete absence of both testicles from the scrotum. In each case the penis was very small, the scrotum a small piece of wrinkled skin, and there was no appearance of hair upon the pubis. Four of them had Levi E. De Rothchild's sign of thyroid inadequacy, *i.e.*, rarefaction of the outer third of the eyebrows. One boy was of Mongolian type. Three suffered from nocturnal enuresis.

To each of them thyroid extract in $\frac{1}{2}$ -grain dose was administered twice a day over a considerable period. The effect was almost immediately apparent, and in six of the cases was completely successful. In the seventh the left testicle descended into the scrotum, but the right found a lodging in the perineum.

The writer has been able to continue his observation on some of these boys to the termination of adolescence, and has found that the testes and penis continued to make a normal growth, but in some the pubic hair was still very scanty. In the first instance the treatment was purely experimental but it was so successful that it was adopted in similar cases, the results of surgical interference being so highly unsatisfactory.

The writer has not had the same success in the treatment of a single undescended testis, probably because in this condition the fault is anatomical, whereas the absence of both testes depends on some functional failure of the endocrine glands.—*The Medical Review*.

GALL-STONES IN PREGNANCY.

DR. AMIE PAUL HEINECK has a very interesting paper in *The New Orleans Medical and Surgical Journal*, February 1919, on gall-stone disease complicating pregnancy.

The paper is too long to do more than refer to, but it will well repay those who have the opportunity to read it in full. We reproduce his summary of the more important points brought out in the text by the author, which will give the reader some idea of the style and importance of the publication:—

1. Gall-stone disease occurs with far greater frequency in women than in men; with far greater frequency in women that have borne children than in women that have remained sterile. Its period of greatest incidence is the child-bearing period.

2. Gall-stone disease, alone or associated with one or more other related or non-related pathological states,

not uncommonly complicates a pregnancy otherwise normal or abnormal.

3. The first manifestations of cholelithiasis may date from the existing gestation or from a previous pregnancy; may precede, coincide with or follow an abortion or premature labor, accidental or induced.

4. All conditions that are associated with, that favor or cause (a) bile stasis, (b) inflammatory or degenerative changes involving the gall-bladder or bile tracts, (c) pathological alterations in the composition of the bile, such as hypercholesterinemia, etc., predispose to gall-stone disease.

5. Pregnancy is an important etiological factor in the causation of cholelithiasis.

6. The pathology of gall-stone disease complicating pregnancy is the pathology of gall-stone disease occurring in the non-pregnant. There may be present: (a) an inflammation of the gall-bladder or bile-ducts in which one, two or many calculi are lodged or impacted; (b) a distention of the gall-bladder or bile-ducts by mucus, pus or calculi; (c) a pericholecystic inflammation, calculous in origin, leading to adhesion formation, to fistula formation, etc., and corresponding disturbances of function; (d) changes in the liver; (e) changes in the pancreas.

7. Some of the symptoms of gall-stone disease are due to the irritation inherent to the presence of gall-stones, to their migration through or impaction in the bile-ducts or neck of the gall-bladder. Other symptoms are due to the concomitant inflammation of the gall-bladder, bile-ducts and neighboring organs, causative of or resulting from the presence of calculi.

8. Rupture of a gall-bladder distended by calculi, by fluid, mucus or purulent in nature, can occur during gestation or during or immediately after labor.

9. In the differential diagnosis of this condition, one should bear in mind: (a) That not infrequently gall-stone disease originates during or may complicate pregnancy; (b) that cholelithiasis and cholecystitis, owing to their reflex symptoms, are often mistaken for gastric disease; (c) that appendicitis and gall-stone disease frequently co-exist; (d) that digestive disturbances associated with acute pain and tenderness in the right hypochondriac region, with or without jaundice, with or without symptoms of biliary colic, are in themselves ample justification for operative exploration of the gall-bladder and ducts.

10. Cholelithiasis is a surgical disease; it calls for operative relief. Medical measures in this disease are merely palliative; appropriate surgical measures are curative.

11. Gall-stone disease in itself is never an indication for the artificial termination of pregnancy.

12. Whenever, for some cause or other, the abdomen is opened in women of the child-bearing age or past child-bearing period, the gall-bladder and larger bile-ducts should be examined if it can be done (a) without or with only slight traumatizing of the tissues; (b) without exposing the patient to too much additional risk; (c) without contaminating clean peritoneum. Should the patient give a history of chronic digestive disturbances, the indication is absolute.

13. Women exposed to pregnancy, suffering from calculous cholecystitis or any other form of gall-stone disease, should be operated, the calculi removed and the gall-bladder drained.

14. Pregnancy does not contra-indicate operations upon the gall-bladder or bile tracts. Peterson reported only three miscarriages in twenty-three reported operated cases. In only one (Roith) of the cases which we considered, did abortion follow the operation.

15. It has been repeatedly demonstrated that the operative relief and cure of cholelithiasis does not unfavorably influence gestation, does not unfavorably

influence parturition. Icterus, whether acute or chronic, is a constant menace to the fetus.

16. Early operation is now, in proper hands, a safe procedure. It is an effectual cure of the symptoms produced by gall-stones; it has a low mortality and guarantees against serious complications in the future.

17. Cholecystostomy, cholecystectomy and choledochotomy have been successfully performed upon pregnant women for the relief of gall-stones.

18. The prognosis of operative intervention is not unfavorably influenced by the existence of pregnancy.

19. Casts and albumen are not necessarily a bar to operative interference.

CAMPBOR IN PNEUMONIA.

FEER (Correspondenz-Blatt für Schweizer Aerzte, Basel) places large doses of camphor in the front rank in the treatment of croupous and catarrhal pneumonia. It proved of great value in the malignant pneumonia of the recent influenza epidemic. It must be given in heroic doses. He advocates injecting 10-15 c.c. of the 20 per cent camphorated oil twice or thrice a day. No injury from large doses is to be apprehended; even children can bear large doses with advantage.

He gave children up to 220 c.c. and 260 c.c. of the 20 per cent. camphorated oil during the course of influenza pneumonia with great benefit.

The camphor is unable to abort the pneumonia, but it modifies conditions in the circulation so favourably that even desperate cases may be enabled to pull through.

P. L. Ginseppi (*Brit. Med. Journal*) treated 250 cases of influenzal bronchitis and broncho-pneumonia with camphor—with a mortality of one—a man who died after three days' illness from broncho-pneumonia.

The incidence of broncho-pneumonia was 10 per cent. In another series of 200 cases during the same outbreak, and untreated with camphor, the incidence was 8 per cent, but the number of deaths was four—2 per cent.

He gives 4 grains of camphor made into a pill with soap three times daily, and, in severe cases, every three hours.

RANAGHAT MEDICAL MISSION.

Two years have passed since we have had a report of this flourishing mission. Since then the lady doctor—Miss Ethel Good—has got married and gone and a substitute is very badly needed, otherwise the work among Hindu and Mahomedan women will suffer.

We notice that the medical services have subscribed very liberally to the buildings at Ranaghat—Colonels O'Kinealy, Rogers, Vaughan, Wilson, etc., gave freely, whilst the late Colonel Bird, I.M.S., gave a large subscription.

Mrs. Bird subscribed Rs. 1,500 for the construction of a ward in memory of the late Lieutenant-Colonel Bird, I.M.S.

The number of patients attended during the year was 75,230 and 682 operations were performed.

Dr. Flint seems to be working almost single-handed and it speaks well for his energy and those who assist to read of the hard work done and the human sufferings relieved. More support is needed and the mission thoroughly deserves sympathy and support.

ANOPHELES MACULIPENNIS AN EFFICIENT HOST
OF THE BENIGN TERTIAN MALARIA PARASITE
IN ENGLAND.

LIEUT.-COLONEL S. P. JAMES—(*Journ. Royal Army Med. Corps*, p. 615)—In a recent official report of an inquiry into indigenous malaria in the neighbourhood of Sheerness, the writer was unable to find zygotes or sporozoites in the stomach and salivary glands of 42 specimens of *Anopheles maculipennis* caught in huts and bedrooms occupied by patients suffering from locally contracted malaria. It was therefore desirable to ascertain by experiment whether *A. maculipennis* is an efficient host and carrier of the malaria parasite in England. On dates between August 30 and September 15, adult female carriers were allowed to feed on a benign tertian gamete who had contracted malaria in England. The usual precautions were taken to ensure that the patient should not become reinfected by the mosquitoes which he was feeding. For the same reason the experiment was not carried beyond the stage at which moderately large zygotes could be found in the stomach wall of infected mosquitoes. Six were dissected when the stomachs were free from blood, and in 2 zygotes in different stages of development were present. Under a $\frac{2}{3}$ -inch objective and low eyepiece 9 large zygotes were counted in one stomach and 12 in the other. Sir Ronald Ross confirmed the findings.—*The Medical Review*.

TREATMENT OF AMŒBIC DYSENTERY WITH
IPECACUANHA BY RECTUM.

G. B. LAWSON—(*Jour. American Med. Assoc.*, p. 1049).—Brem and Zeiler, in 1911, successfully used ipecacuanha by rectum and through the appendix after appendicostomy in several cases of amœbic dysentery that had not yielded to other methods. The writer has been using a similar method for about five years, although ignorant of Brem and Zeiler's work. His method is to put 60 or even 120 grains of powdered ipecac. into about 24 ounces of water; this is kept hot for an hour, but not allowed to boil. After washing out the bowel with warm water, this whole preparation, without filtering, is given slowly by rectum and to be retained as long as possible. If there is much pain and tenesmus, only may a part be given. In a few cases there was some discomfort and the treatment had to be

slowed down. Formerly the writer at the same time gave salol-coated ipecac. pills. Later emetin came into use—he used this hypodermically with ipecac. by rectum. In two cases the ipecac. by rectum was successful without other treatment.

A man, aged 63, was seen on December 4, 1917, complaining of rectal discomfort—five or six stools a day. The illness began five years before, with diarrhœa, which had been better and worse at times. In the spring of 1916 he was given emetin hypodermically in rather large amounts, with salol-coated ipecac. pills by mouth, and chaparro amargosa, without much improvement. In February, 1917, he was given arsphenamin intravenously with improvement for nearly four months, and then a relapse. Later, he was again given arsphenamin without improvement. Since then he had fared badly, as a rule; the bowel was always full of gas, and there were from two to six movements a day, with some blood-tinged mucus.

Rectal examination revealed many superficial yellow ulcers; the mucus from the rectum showed much pus, red blood cells and many large active motile amœbæ containing red blood cells. The patient was given the ipecac. preparation by rectum every day, with immediate improvement. The amœbæ, pus and blood soon disappeared from the stools, and for five and a half months he has had no trouble whatever. He has been using an occasional ipecac. treatment during this time. During this treatment he was not dieted in any way, and he did not stop his regular work.

The hypodermic emetin treatment for dysentery can be greatly aided by also giving ipecac. by rectum. It certainly seems preferable to apply a remedy locally rather than have it traverse the whole alimentary canal before reaching the seat of the disease. It also seems better to use some form of ipecac. by rectum rather than give it hypodermically, where it will diffuse through all the tissues of the body by the time it reaches the seat of the disease. Barium enemas can be seen with the fluoroscope to pass up to the cæcum. Probably ipecac. preparations rapidly spread to all the surface of the large bowel, where it can have a direct local effect and the soluble portion can be absorbed even into the deeper tissues.—*The Medical Review*.

CALOMEL IN HÆMORRHOIDS AND PRURITUS ANI.

F. W. MOLLER and others—(*Ugeskrift for Læger*, Sept. 12, 1918, p. 1462).—Many years ago the writer found in "*Excerpta Medica*" an account, abstracted from a German medical journal, of the striking effect of calomel applied in powder form to hæmorrhoids. They and the adjacent skin are carefully cleaned and dried, and the calomel is then thickly dusted on them. The pain to the hæmorrhoids quickly ceases, and after the application has been repeated several times, the

hæmorrhoids dwindle and are converted into pale, indolent flaps of skin. These claims on behalf of calomel were amply verified by the writer during the following years, but he thought the matter too trivial, or the remedy too generally known, to rush into print. But when it cropped up in the correspondence columns of *Ugeskrift* he added his own to the testimony of many other correspondents. One of these, Ove Hamburger, has found the action of calomel powder on pruritus ani to be so striking as to deserve the rare praise of a specific remedy. Dusted on the anus and its neighbourhood after defæcation, it forms a white lacquer, traces of which are still visible 24 hours later. It is not, therefore, necessary, as one writer suggests, for the calomel to be incorporated in an ointment in order to make it adhere to the skin. Indeed, calomel ointment appears, according to another writer, to be comparatively inert and to be much less effective than calomel powder. One correspondent reports the case of a colleague whose pruritus ani had persisted for years, in spite of varied treatment, including the X-rays. Calomel in ointment form also proved inert, but when dusted on as a powder the disease vanished. Another correspondent gives a facetious account of two patients, one poor, the other rich. The poor man obtained instant relief by consulting the local practitioner, who had been following the correspondence in *Ugeskrift* about calomel in pruritus ani. The rich man hied him to a German watering-place only to return with his pruritus as troublesome as ever.—(*The Medical Review*.)

OIL OF CHENOPODIUM FOR ANKYLOSTOMIASIS.

(*Lancet*, Jan. II. p. 90).—A note in the *Colonial Journal* shows that in the Fiji Islands the use of oil of chenopodium, or American wormseed oil, is constantly increasing. It is less toxic, more efficient, less costly, and has a greater effect upon the ascarides associated with hookworms than thymol. Failure to obtain good results with the oil of chenopodium is claimed to be due to small dosage, the correct amount being as follows: Over 60 years of age, 20 γ or 40 drops; 21 to 60 years, 30 γ or 60 drops; 11 to 20 years, 20 γ or 40 drops; under 10 years, 3 drops for each year of age; pregnant women, 18 drops. The doses are divided into two equal parts, one to be given at 7 a.m., and the other at 9 a.m., these being preceded by a dose of well-diluted magnesium sulphate on the afternoon of the day before treatment with the oil is begun. Two hours after the last dose of oil a second dose of the salts solution is given. A report based on the first 1,000 cures occurring in Fiji states that of those receiving two treatments, 70 per cent or more are cured. In a few selected parts where the people were obedient to advice in

regard to diet the cures after two treatments reached 85 per cent. Of the 1,000 cures obtained in the first 3 months of active work, 801 occurred after two treatments, 184 after four treatments and the remaining 15 cures after five treatments. No untoward results have been reported from the use of the drug.—(*The Medical Review*.)

THE NEUROLOGY OF EXOPHTHALMIC GOITRE.

As a result of investigations in visceral neurology, F. M. Pottenger (*Endocrinology*, Vol. 2, No. 1, 1918) was impressed with the unsatisfactory theories which had been offered to explain the clinical nervous phenomena which accompanied exophthalmic goitre. The disease in the past had been approached from much too narrow a standpoint, attention having been centered too much on prominent symptoms. A broader discussion of the disease should comprise the vegetative nervous system, the central nervous system and the various glands of internal secretion.

Exophthalmic goitre is an extremely complex picture in which the clinicians have emphasized to too great an extent the exophthalmos, tachycardia and increased thyroid secretion, which are manifestations of irritation of sympathetic fibres. The real picture is that of a rapidly destructive metabolism dependent apparently upon the thyroid hypersecretion and its influence on the nervous system and other endocrine glands. The relationship of the three prominent symptoms, exophthalmos, tachycardia and thyroid hyperactivity is not at all clear. These may all be evidence of the same stimulation of the cervical sympathetic fibres, or the thyroid gland may be diseased primarily and the efferent impulses from it so irritate the nerve cell of the cervical sympathetic ganglia as to cause the marked stimulation of those motor neurons which supply the muscle of Muller and the heart, and so cause exophthalmos and tachycardia.

If exophthalmos and tachycardia result from stimuli which emanate from the diseased thyroid, the synapse in all probability occurs in the cervical sympathetic ganglia, and the reflex would be the proof that the sympathetic ganglion cells have the reflex properties of the cells of the central nervous system.

There seem to be two predominant etiological factors in hyperthyroidism; deep emotions, sexual excitement and fear; the other, infections of the nasal sinuses and tonsils, alveolar abscesses and pulmonary tuberculosis. Concerning the latter, Pottenger has been impressed with the frequency with which an enlargement of the thyroid gland has been found in the early active stage of pulmonary tuberculosis.

Omitting the three localised cervical sympathetic symptoms, exophthalmos, enlarged and functionally hyperactive thyroid and tachycardia, and omitting also the increased activity of the adrenals, most of the common visceral symptoms of this disease, such as Von Graefe's sign, excessive sweating, diarrhoea, etc., seem to manifest themselves in parasympathetic rather than in sympathetic stimulation. The variability of the symptoms seems to depend on the sensitising influence of thyroid secretion upon nerve cells, lowering the threshold of response to nerve stimulation on the one hand, and to the natural, underlying, predisposing nerve tonus as described by the terms sympathicotonic and vagotonic by Eppinger and Hess and the relative tonus of these two divisions of the vegetative nervous system in different organs of the same individual.

While Pottenger's article was taken up with more strictly physiological and speculative questions, a recent paper by L. F. Barker (*J. A. M. A.*, Vol. LXXI, No. 5, 1918) discusses the nervous and mental symptoms in exophthalmic goitre from a clinical standpoint. The wide variability of the symptoms is clearly emphasised. Toxic degenerative processes involving the peripheral motor and sensory neurons are only occasionally met with, while palsies of the cranial nerves are far more frequent, such as ophthalmoplegias or the clinical picture of a bulbar paralysis, resembling a myasthenia gravis. Grosser lesions of the brain and spinal cord have occasionally been encountered in exophthalmic goitre, but in many cases the relation is only an accidental one. The evidence for an epilepsy of thyrotoxic origin is still too incomplete to permit of a safe judgment. The fine tremor which is so characteristic of exophthalmic goitre is probably of cerebral origin although its real pathogenesis cannot be explained any more than other pathological tremors.

Neurasthenic anxiety, phobic and obsessional states are frequent in cases of exophthalmic goitre, while psychoses, particularly various forms of depression, are not uncommon. Even the mild cases of exophthalmic goitre show neurotic symptoms more or less clearly defined.

One of the most common mental accompaniments of exophthalmic goitre seems to be a sort of undifferentiated depression. In many of the cases of anxiety neurosis or anxiety hysteria, one often finds symptoms which are extremely suggestive of hyperthyroidism, such as excessive sweating, tachycardia, fine tremor, dermatographia and slight exophthalmos. These symptoms are probably secondary to the extreme emotional reactions of psychoneuroses. In one case of exophthalmic goitre there was an extreme muscular fatigue resembling a myasthenia gravis. This symptom disappeared after a successful thyroidectomy. In another

interesting case the enlarged thyroid pressed upon the phrenic nerve causing a persistent and severe hiccough, which disappeared after removal of thyroid gland. The relation of the disease to the sexual glands is shown by its appearance during the menopause or its appearance and fluctuations during pregnancy. Concerning its emotional origin, we have seen the sudden appearance of exophthalmic goitre after an emotional shock, this being in harmony with our present knowledge of the effect of the emotions on the ductless glands and the internal secretions.—(I. H. Coriat, M.D., in the *(Boston Medical and Surgical Journal)*)

USEFUL LITTLE BOOKS.

WE have received from Messrs. E. & S. Livingstone copies of their Catechism series, dealing with Chemistry, Operative Surgery and Anatomy.

There is no method by which a student gains such accurate knowledge as by means of question and answer. In India we practically never see students questioning each other as they dissect or work at other parts of the medical curriculum.

This in our young days was the great means we employed to get our knowledge of a subject mobilized, as it were, and ready to face any examiner. With this Catechism series at hand Indian students should have no difficulty in following on the methods that have worked well in other countries.

Another very useful little waistcoat pocket-book is the sixth edition of McDonald's Pocket Prescriber and Guide to Prescription Writing. It is published also by Livingstone, and can be honestly recommended to students and practitioners. Besides five hundred and fifty useful prescriptions, it gives posological tables and an appendix with weights and measures, French and English, also a vocabulary of Latin words and phrases commonly used.

THE INDIAN NURSES' HOSTEL,

WE are very pleased to state that owing to the energy and generosity of Lady Rogers and a host of friends, Indian private nurses can now be obtained from the Indian Nurses' Hostel, at the rate of Rs. 5 per day for medical, surgical and maternity cases, plus washing and travelling expenses. Rs. 7 per day will be charged for all infectious cases which necessitate a nurse being placed in quarantine after attendance.

At present the staff is very small but it is hoped to increase it before long and again as soon as the nurses pass out from the hospitals.

This hostel is in no way in opposition to that of St. Luke's, Amherst Street, where nurses can also be obtained.

Reviews.

Hughes' Nerves of the Human Body with Plates—By CHAS. R. WHITTAKER, F.R.C.S. (Edin), etc. Second Edition. Revised and Enlarged. Edinburgh: Messrs. E. & S. Livingstone, 1918. Price 3s 6d.

PROFESSOR HUGHES' Handbook on the Nerves of the Body has been revised and largely rewritten, also new illustrations have been added.

In this little book the nerves, their anatomy, etc., are all collected so as to be readily available for students, or for consultation. The little volume is well got up and the twelve plates illustrating the letterpress are very good.

That it supplies a want is shown by the necessity for a new edition.

Aids to Surgery—By JOSEPH CUNNING, M.B., B.S., etc., and C. A. JOLL, M.S., F.R.C.S. Fourth Edition. London: Messrs. Baillière, Tindall & Cox, 1919. Price 4s. 6d.

THAT these "aids" are deservedly popular is evidenced by the fact that four new editions and eight reprints have been called for since its first appearance in 1904. Mr. Cecil A. Joll has been responsible for the revision in this new edition. The surgical matter has been brought up to date and some of the more recent advances in military surgery have been incorporated in the text.

The book has grown to very large proportions as an "aid," running to over 400 pages. It gives very clear and concise accounts of the conditions discussed and a student who knows all therein contained will pass out well-equipped to learn the practical side of surgery. The publishers are to be congratulated on their share of the publication.

Manual of Bacteriology—By ROBERT MUIR, M.A., M.D., F.R.S., Professor of Pathology, University of Glasgow, and JAMES RITCHIE, M.A., M.D., F.R.C.P. (Edin). Irvine Professor of Bacteriology, University of Edinburgh. Seventh Edition; Two hundred Illustrations and Six Coloured Plates. Publishers: Henry Frowde & Hodder and Stoughton, 1919. Price 16s. net.

THIS well-known Oxford medical publication only requires to be brought to the notice of the profession. We suppose there have been very few men qualified during the last twenty years who have not possessed a very close and intimate knowledge of "Muir and Ritchie." Since its earliest edition—the one with which we had a close acquaintance,—the volume has grown very considerably in size and importance. The present (seventh) edition, besides bringing the text up to date, includes a lot of new work on bacteriology which is the result of the impetus given to research by the war. We congratulate the authors

on the very valuable additions made to the former edition and have no hesitation in recommending this book to all—students and practitioners.

As may be expected the publishers have spared neither trouble nor expense in placing the volume on the market. The result is a very fine volume and splendidly produced.

Genitourinary Diseases and Syphilis—By HENRY H. MORTON, M.D., F.A.C.S., Clinical Professor of Genitourinary Diseases, Long Island College Hospital, Fellow of the New York Academy of Medicine, etc. Fourth Edition. Revised and Enlarged. 330 Illustrations and 36 Coloured Plates. London: Henry Kimpton, 1918. Price 36s.

SINCE its first publication in 1902 this well-known and deservedly popular volume has steadily grown in size, in importance and in favour with the profession. Four editions and six times reprinted shows the demands that had to be satisfied.

In the present edition the author has rewritten the entire work and brought it up to date. The knowledge of syphilis and its treatment has progressed during the last few years; the author gives details of all such advances including the detection of spirochetæ in the brains of paretics. The intensive treatment of syphilis, reconsideration of the views held regarding hereditary syphilis, are all included in this really fine production.

The volume is beautifully illustrated and has been placed before the public by the publishers in a manner deserving the highest commendation.

We say unhesitatingly that this is a volume that will well repay perusal, and is one that those in practice in India can ill afford to be without.

The coloured plates are particularly good and demonstrate the appearance of the many inflammatory conditions they illustrate in a most instructive manner.

Gynæcology—By WILLIAM P. GRAVES, M.D., Professor of Gynæcology at Harvard Medical School. Second Edition, thoroughly Revised. Octavo volume of 883 pages with 490 original Illustrations, 100 of them in colours. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, 33s. net.

THIS important work requires very little in the way of a review, other than an indication to the profession that a new and revised edition is available. The first edition only appeared a little over two and a half years ago, and already a reprint and a new edition have been called for. In this edition the book has been brought completely up to date. Special attention has been paid to those parts of the subject in which the greatest advances in knowledge have been made.

The relationship of gynæcology to the internal secretions has figured largely in the medical press

of recent years. The author has entirely rewritten the sections dealing with this subject. Similarly with regard to ovarian organotherapy, ovarian transplantation, radium treatment of cancer.

Whatever our personal opinion may be with regard to Freud's theories on infant sexuality it is important and necessary to know something concerning them. The author provides this in a new chapter in which he discusses the relationship of gynæcology to the sex impulse. To the ordinary man the ideas put forward by Freud regarding infant sexuality appear monstrous and very imaginative: none the less many seem to be inclined to accept some parts at least as correct. It looks as if every act almost, of infant, child, or adult were connected with sexuality. This we can never believe.

The volume is most beautifully illustrated, and in Part III the author describes and illustrates with new drawings many new operations and devices.

As a reference book for the practitioner and senior student this new edition would be difficult to beat, and we can thoroughly recommend it to all.

The publishers have excelled even their own high standards, and have placed a splendidly produced volume within the reach of all physicians.

Annual Report.—The Rockefeller Foundation, 1917.

THIS rather belated report of the working of the Rockefeller Foundation for 1917, gives considerable details of the very extensive researches, enquiries, and assistances to such that are being carried on throughout the world. The world-wide activities of this splendidly equipped Foundation are difficult to realise. They include great assistance to the Red Cross Public Health work in many lands, a vast research staff scattered all over the globe, campaigns against malaria, the eradication of yellow fever, medical education in China and many other activities.

A perusal of the President's report gives one some idea of the enormous amount of original work that is going on and also the valuable assistance that the Foundation affords to workers all over the world. A map is attached, giving the centres of activities marked thereon. This helps one to visualize the extent of the research and work performed.

ANNUAL REPORTS.

REPORT ON THE ADMINISTRATION OF AJMER-MERWARA FOR 1917-1918.

THE following is the space allotted in this report to the medical matters of Ajmer Merwara:—

MEDICAL (YEAR ENDING THE 31ST DECEMBER, 1917.)

The number of dispensaries, *viz.* 6, remained unchanged. The buildings in which three *viz.* those

at Ramsar, Pisangan, and Todgarh are accommodated, are neither adequate nor suitable, a fact which doubtless accounts in part for the absence of enthusiasm displayed towards these particular institutions. Elsewhere in British India dispensaries are better housed and better found, but for want of the necessary funds dispensaries in the district will presumably remain in their present unsatisfactory condition. There was an increase in the number of cases treated in the year under report, the number being 80,363, as against 74,947 in 1916. The increase was entirely due to an unprecedented epidemic of malarial fever. In a district like Ajmer-Merwara it would be worth giving a trial to travelling dispensaries, a policy which has met with considerable success in other provinces. The dispensaries generally require more supervision than under present conditions the Civil Surgeon is able to give them, and deserve more help from private generosity than they receive.

ADMINISTRATION REPORT OF THE PUNJAB, 1917.

BIRTHS AND DEATHS.

THE rough estimated population, prepared by adding births and subtracting deaths, since the last census report works out in 1917 to 21,005,233 (11,506,888 males and 9,498,345 females), as against the census population of 19,337,146 (10,608,101 and 8,729,045). Calculated on the population thus estimated, the birth-rate was 41·7, or 3·6 less than the rate calculated on the census population, and similarly the death-rate at 34·9 was less by 3·0. The estimated population is in excess in all the districts of the province except Simla.

Previous to the three last months of the year when malaria caused a high death-rate, the year 1917 was a healthy one, the birth-rate was average and the death-rate low. Cholera prevailed only to a slight extent, small-pox gave the lowest rate in recent years, plague, though worse than in 1916, showed a less rate than that recorded for some years, while the rates under other heads of mortality were about the average.

The death-rate during the year under report amounted to 37·9, which is 7·2 per mille in excess of the rate recorded in the year preceding and 6·7 compared with the average for the previous five years. The actual numbers were 733,109 deaths (378,785 males and 354,324 females). This high death-rate is due entirely to fevers, which accounted for no less than about 70 per cent. of the total deaths registered. The rates for dysentery and diarrhoea remained the same as in the previous year, while under cholera, small-pox and all other causes there was a slight decrease; under the other heads of mortality, fevers being omitted, there was a slight increase.

Cholera showed no marked prevalence. Altogether there were 1,365 deaths, *i.e.* 286 less than in the previous year, the mortality rate being 0·07 per mille, as compared with 0·09 in 1916 and 0·30, the average for the previous five years. This good result is doubtless very greatly due to the early preventive measures taken and to better knowledge of the manner in which the disease is spread. With the exception of three deaths the province was free from cholera in the first half of the year, but it assumed serious proportions in the months of September and October, when 628 and 463 deaths, respectively, were recorded. In November there were 86 deaths and in December the province became free. Only in one instance was an outbreak traced directly to the Hardwar pilgrim route, but it is probable that the epidemic at Jagadhri originated in that vicinity. An outbreak of cholera in Multan caused some anxiety to the Military Department

on account of the Army Clothing Factory there, as it was reported that some of the employes had contracted the disease and it was thought that the clothing might become contaminated; successful measures, however, were taken to check the disease.

At Jagadhri great difficulty was found, as at Panipat last year, in discovering and disinfecting the numerous wells, public and private. The sub-soil water at Jagadhri is so near the surface that it costs little to sink a well and almost every man can afford the luxury of having his own water-supply, and incidentally one that can easily be fouled, in his own compound. The heavy rains this year raised the sub-soil level so high and caused such a large amount of surface flow into the badly constructed and protected wells as to make it extremely difficult to keep them free from contamination, and rendered it necessary to disinfect them repeatedly before the desired effect was obtained. If a piped water-supply is not introduced into a town where such conditions prevail, the next best thing is to encourage the use of tube wells; in some places, as in Hoshiarpur and Ferozepore, many of the people are well aware of the protection so afforded against water-borne diseases, but owing to the war the increased cost of these wells has made their extended use almost prohibitive.

The total deaths from small-pox amounted to 1,417 as compared with 2,886 during the previous year. The death-rate amounted to 0.07 per 1,000 of population, as against 0.15 in 1916 and 0.79 for the previous five years. This year's rate is the lowest on record since the introduction of the system of registration of births and deaths in this province. The mortality rate from small-pox was highest in the districts of Gurgaon and Lahore.

There were 9,724 deaths from plague in the province, compared with 4,151 in the preceding year. It was not a bad year on the whole, but there were as many as 4,084 deaths in the last two months, *i.e.*, nearly half the total, indicating from experience a bad epidemic in 1918. Rawalpindi and Jhelum in the north-west, Ambala in the east, and the districts of Lahore, Jullundur, Gurdaspur, Ludhiana, and Gujranwala in the centre were worst infected, accounting for more than 76 per cent. of the total mortality. The case mortality was 69 per cent., as compared with 79 per cent. last year. The disease was chiefly bubonic in type.

There was a marked change in the seasonal curve. Usually there is a gradual rise continuing from January to April and then an abrupt fall. This year the rise extended over May, and though it dropped in June, it was not till July that there was a very definite fall. This was associated with the unusual rainfall in the late spring. The fall in the seasonal curve reached its lowest in August, when there were only 87 deaths; but from thence onwards the rise was much steeper than would generally be expected.

As usual, the measures depended upon were—

(a) Ratting by means of traps, poison and smoke apparatus—concentrated round infected areas and in infected places during epidemics, and in selected late infected villages during the off season;

(b) Cresol fumigation and inoculation, where possible, during infection; and

(c) in some districts evacuation.

The city of Rawalpindi was, as usual, an important centre for the distribution of the disease. Barium carbonate was used throughout the year as a rat poison with satisfactory results.

Under "Fevers" a total of 510,812 deaths was registered, against 376,003 in 1916, showing an increase of 134,809 deaths. The death-rate was 26.42, against 19.44 in 1916, and a quinquennial mean of 16.68. The

mortality from fevers was the highest on record since 1908, in which year it amounted to 697,058. The largest number of deaths was recorded in the last quarter of the year.

The increased mortality in those districts in the province which showed a higher death-rate from fevers is attributable to the prevalence of malarial fever in an epidemic form in the last quarter of the year as the result of the excessive monsoon rainfall.

It will be observed that in Multan the death-rate was very high, even higher than in 1908, and the chief cause of this increase was the very exceptional rainfall, which amounted to 19.83 inches, against 6.25 inches in 1916. No such heavy fall has been recorded in Multan in the last 20 years, for which period only are records available. The high fever mortality rate extended to the whole of the Multan Division, and it is of common knowledge that the country to the south-east—Bahawalpur and Sindh—participated, if anything, to a greater extent in this disastrous result of an exceptional autumnal rainfall occurring in what would be described, ordinarily, as an arid region.

The Medical Department, already much depleted, has had to meet further demands on its personnel for military service during the year, but its members have not spared themselves in combating the severe malaria epidemic that prevailed in the latter part of the year, and have cheerfully discharged the other additional duties that war conditions have forced upon them. While the Assistant Surgeons have shown themselves responsive to the call for volunteers for military service, it is a matter for deep regret that the same cannot be said of the Sub-Assistant Surgeons, whose general unwillingness to volunteer for field service outside India has come to be recognized as a standing reproach to their class.

Six new dispensaries were added during 1917, making the total number of institutions at the end of the year 480, representing roughly only one dispensary for every 41,000 of the population. The number is still decidedly inadequate in many districts.

The total number of patients treated during the year was 5,440,696 (96,019 in-patients and 5,344,677 out-patients, against 5,051,811 (94,285 in-patients and 4,957,526 out-patients) in 1916, an increase of 388,885, of whom 1,734 were in-patients and 387,151 out-patients. Most districts contribute towards this increase.

The following abstract exhibits the more important diseases and conditions for which patients attended dispensaries during the year :—

Cholera ...	...	436
Dysentery ...	...	78,841
Enteric fever ...	...	2,008
Rheumatic fever and Rheumatism	...	87,655
Small-pox ...	...	170
Tubercle of the lung ...	...	4,582
Other tubercular diseases	...	4,519
Diseases of the Eye ...	...	1,031,151
Diseases of the Ear ...	...	434,202
Diseases of the Nose ...	...	26,409
Dyspepsia ...	...	296,238
Diarrhoea ...	...	54,352
All other diseases of the digestive system	...	552,138
Ulcers ...	...	413,119
Other diseases of the skin	...	505,281
Injuries, general and local	...	209,551

One million six thousand eight hundred and sixty-six persons were treated for malaria at fixed hospitals and dispensaries, and 97,357 by itinerating dispensaries; but in badly affected districts the people could not go to dispensaries for treatment, nor could the itinerating dispensaries reach them owing to the roads being

rendered impassable through floods. Deaths from fevers, according to the figures furnished by the Sanitary Commissioner, numbered 510,812. Compared with 1916 there was a rise of 2,703 in-door and 345,702 out-door patients treated for malaria. As it became apparent that the heavy monsoon rains would be followed by an epidemic of malaria, special measures were undertaken to cope with it. Quinine was freely issued, and one or more Sub-Assistant Surgeons provided with medical panniers were detailed to itinerate in each of the malarious districts: in all 26 itinerating dispensaries were put into operation.

Two hundred and fifty thousand six hundred and ninety-one operations were performed, as against 266,475 in 1916. Of this number, selected operations totalled 39,046, as compared with 40,642 in 1916, while the number of patients operated upon was 242,555, against 259,331. Much of this falling-off in selected operations performed was due to the widespread prevalence of malaria at a time when cases chiefly resort to dispensaries for operations. The same remarks apply to the very considerable reduction in minor operations; but in each case it was mainly owing to the reduction in the number of Assistant Surgeons available for civil work, due to their having joined the Military Department and to the increased time given to recruiting work. Of the 242,555 patients operated upon, only 527 died, a percentage of '22, as compared with '20 of the previous year.

The districts in which the largest number of selected operations were performed were Ferozepore 9,906, Jullundur 2,861, Karnal 2,429, Amritsar 2,254, Gurgaon 1,731, Shahpur 1,628 and Hissar 1,534. Of the selected operations performed, extraction of the lens for cataract accounted for 14,778. Altogether 11,195 patients were operated upon, and nearly 95 per cent. are reported to have obtained good vision.

PUNJAB LUNATIC ASYLUM.

The rise in the number of inmates and the daily average strength of the Asylum continues. The latter, which amounted to 837'03, was the highest on record. There was an appreciable decrease as compared with last year in the number of patients discharged as "cured," but the number of those discharged as "improved" has increased.

A special feature was the number of military patients—123,—admitted from the various expeditionary forces; as many of them were only slightly affected by shell-shock or by privation they made a rapid recovery.

There was no epidemic of disease during the triennium, and the general health of the patients was good. The daily number of sick—about 10 per cent. of the population—is about the same as in previous years and may be regarded as creditably low. A more disquieting phenomenon has been the rise in the death-rate due especially to tubercle and pneumonia, but the autumns of 1916 and 1917 were both unhealthy and tended further to lower the vitality of a class already very susceptible to disease.

Every effort continues to be made to provide occupation for the patients, and the advent of the military patients has stimulated the popularity of gymnastics. It is a matter for satisfaction that 50 per cent. of the inmates are now provided with regular work, and that the garden continues to provide all the vegetables the institution requires.

The difficulty of accommodation is becoming acute: the necessity for establishing a separate enclosure solely for criminal lunatics has been recognised, and the question of acquiring land for the purpose is receiving the attention of Government.

THE PASTEUR INSTITUTE, KASAUJI.

The number of persons inoculated against rabbies at the Pasteur Institute, Kasauli, was 5,206, out of which large number only 44 cases were classed as failures; of those treated, 382 were Europeans and 4,824 were Indians. As the provincial laboratory of the Punjab, the Institute was also called upon to examine and report on 1,560 cases, as compared with 988 in the previous year.

VACCINATION.

The total number of operations performed by all establishments was 804,229, showing a decrease of 104,409. Of this number, 621,650 were primary and 182,579 re-vaccinations, as compared with 705,338 and 203,300, respectively, in the previous year. The decrease of 83,688 in primary vaccination is held to be due to fewer infants being available for vaccination in consequence of the high infantile mortality that occurred during the widespread epidemic of malaria in the autumn of 1917. The decrease of 20,721 in re-vaccinations is said to have been due to re-vaccination being performed in those parts of the province which were relatively less populous than in those in which re-vaccination was carried on last year; also to the very marked lessened prevalence of small-pox and the greater prevalence of malaria.

The percentage of males and females to total number of re-vaccinations was 65'95 in the case of males and 34'05 in that of females, as against 66'98 and 33'02 in the preceding year. This percentage of success in primary vaccination was 98'25, as against 95'22 in the previous year, while in the case of re-vaccination it was 77'16, as compared with 71'89. The satisfactory result may well be due to the training of the vaccination staff in the Punjab Vaccine Institute. The percentage of vaccinations in which results were not known to the total number in 1917-18 was 4'80 in the case of primary and 18'71 in that of re-vaccination, as compared with 5'31 and 19'64, respectively, in the year preceding.

The total number of tubes issued by the Punjab Vaccine Institute was 49,087, as compared with 42,438 in the previous year. Of the 20,298 tubes sent out of the Punjab, 13,236 tubes or 1,058,880 doses of vaccine were supplied for the overseas forces.

ADMINISTRATION REPORT OF THE JAILS OF BIHAR AND ORISSA, 1917.

THE statement by Lt.-Col. B. J. Singh, C.I.E., I.M.S., shows the admissions to hospital and deaths from chief diseases among the convicts. The total number of deaths among the convicts was 186 and death-rate per mille 31'7, against 229 and 34'4, respectively, in the year before. The following is a brief account of the admissions and deaths from chief diseases among prisoners of this class:—

This disease was responsible for 49 cases and 20 deaths, against 25 cases and 13 deaths in 1916. Forty-five cases occurred at Bhagalpur, of which 18 proved fatal and one each at Arrah, Purnea, Puri and Hazaribagh. The cases at Arrah and Puri recovered while those at Purnea and Hazaribagh ended fatally. The outbreak at Bhagalpur was of an epidemic nature. It started on the 24th of October, 1917, and ended on the 25th November of the same year. Three days before the outbreak of the disease a batch of 213 prisoners was received in the jail from Orissa Native State jails, where cholera was said to be prevalent. The batch on arrival was kept in a separate ward segregated from other prisoners in the jail, and on the 4th day of their arrival, while they were still in segregation, cholera broke out among them. The epidemic was of a very virulent nature and caused

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among these prisoners within 13 days 39 cases and 15 deaths. It was very fortunate that the disease did not spread to any serious extent to other prisoners in the jail, among whom there were only 6 cases and 3 deaths. The cases in other jails referred to above were of a sporadic nature and need no further comment.

The incidence of this disease was much less in the year of report than in the previous year. The number of cases was 751 and deaths 39, against 1,009 cases and 66 deaths in 1916. The decrease is shared by 13 out of the 22 jails. The Central Jail at Bhagalpur, however, is responsible for the largest decrease, it returned 225 cases and 19 deaths, against 448 cases and 34 deaths in the previous year. The jails which, on the other hand, show marked increase in the incidence of this disease are Buxar with 67 cases, against 38; Gaya 36 cases, against 13; and Hazaribagh 118 cases, against 93, in the previous year. Notwithstanding the very marked decrease noticeable in the figures of Bhagalpur, that jail is still responsible for 31 per cent. of the total number of cases and 50 per cent. of the total mortality of the central and district jails of the province.

The incidence of this disease during the year was slightly higher than in the previous year but the number of deaths fell from 6 to 4. The jails chiefly responsible for the increase were Buxar, Gaya, Arrah, Bhagalpur and Balasore. The increase in each case was due not to any change in the sanitary conditions of the jails concerned but mainly to the admission of a proportionately larger number of prisoners infected with malaria. Quinine was used as a prophylactic throughout the rainy season, as in previous years, and the measure has been reported to have proved successful in keeping down the incidence of malarial disease.

In my last year's report I commented on the continued increase in the incidence of this disease in our jails since the year 1911. During the year of report this increase has been maintained. The number of cases rising from 152 in 1916 to 181 in the year of report and the number of deaths from 40 to 44. The disease showed a marked increase in the jails at Gaya with 93 cases and 18 deaths, Cuttack 23 cases and one death, and Buxar 18 cases and 13 deaths. The number of cases and deaths at Bhagalpur was much less than in the previous year, being 21 and 8, against 59 and 24, respectively, in 1916. As stated in my previous report, the continued progress in the spread of the disease is largely due, specially in the central jails, to the lack of suitable accommodation for segregating such cases. Since the submission of the last report a new hospital with a separate tubercular ward has been sanctioned for Bhagalpur and the new ward sanctioned for Gaya has been built. Plans and estimates for constructing separate tubercular wards in connection with certain other jails are under preparation and proposals are under consideration for using the Ranchi District Jail for the segregation and treatment of cases of this class.

The number of admissions to hospital from these causes was the same as in the previous year, viz., 134, while the number of deaths decreased by 2, being 6 against 8 in 1916.

The number of cases of this disease was slightly higher than in the previous year, being 32 against 27, but the number of deaths showed a considerable fall, being 7 against 13 in the year before. The largest number of cases, viz., 14, was supplied by Bhagalpur and the case mortality was highest at Bankipore, where all the 3 cases died.

Both the number of admissions and deaths under this head showed a marked decline. The number of cases fell, from 822 to 532 and deaths from 25 to 13. The largest number of cases occurred at Bhagalpur and Hazaribagh, due to the prevalence of chicken-pox.

The number of cases admitted to hospital was 223, against 197, and the number of deaths 5, against 7 in the previous year.

The incidence of this disease showed an appreciable increase, the number of cases being 716, against 621 in the previous year, but the number of deaths remained the same as in 1916, viz., 7.

The number of cases under this head showed a considerable decline and there was no death from this cause, against one in the previous year.

The scales of diet fixed for the several classes of prisoners are given in Statement No. VIII. The modified dietary recommended by Major McCay was in use as an experimental measure in the jails at Muzaffarpur and Balasore up to the end of January 1917 and the result of the experiment was reported to Government. This diet has now been ordered to be given on a voluntary basis in all jails in the province.

Correspondence.

TREATMENT OF BERIBERI.

THE following correspondence has been forwarded for publication. The subject matter is of the very greatest interest and importance to medical officers in India, who are continually meeting with cases of so-called "deficiency diseases."

We give the correspondence in full.

Letter No. R. & S. 4650-18, dated 17th January, 1919, from the Asst. Secretary, Revenue and Statistics Department, India Office, London, to the Secretary to the Government of India, Department of Education.

SIR,—With reference to Mr. Kershaw's letter of the 18th October, 1917, No. R. & S. 3084-17, I forward for information a copy of the papers on the subject of the treatment of beriberi.

Note by Sir Havelock Charles, dated the 10th June, 1918.

Letter from the Bacteriologist of the Institute of Medical Research, Federated Malay States, dated the 23rd September, 1918.

Note by Sir Havelock Charles, dated the 31st December, 1918.

Letter from Dr. A. Harden, Deputy Director, Lister Institute of Preventive Medicine, London, dated 9th May, 1918, to the Under-Secretary of State for the Colonies.

SIR,—Last year this Institute received from your Department copy of a letter from Sir Arthur Young, Government House, Singapore, dealing with the use of an alcoholic extract of rice polishing as a therapeutic agent in beriberi. The letter contained a favourable report from the Director of the Institute for Medical Research at Kuala Lumpur upon the value of this product in cases of early and acute beriberi, and arrangements were reported for securing a future supply.

2. During the last two years, researches in this Institute with the object of discovering other foodstuffs rich in anti-beriberi properties have met with considerable success. The following table gives the value of some of the richer of these substances as estimated by experimental work on animals.

It will be seen that wheat germ (or embryo) and "Marmite" (name given to a commercial yeast extract on the market) have a high value comparable with that possessed by alcoholic extracts of rice polishings. There would therefore seem to be little justification for the labour and expense involved in preparation of the latter product while these other foodstuffs are available and can be tried. Rice germ, unfortunately, through not being an article of commerce, being removed with the bran and mixed in with the polishings, the materials for the experimental work was prepared by hand in the laboratory.

3. At the date on which your communication was received we were not able to publish these results owing to the prohibition of the Censor. This restriction has since been removed and I send reprints of the paper from which the figures given in the above table are taken (H. Chick and E. M. Hume, *Trans. of the Society of Tropical Medicine and*

* Letter from Lister Institute, dated the 9th May, 1918.

Material.	Description.	Curative dose for pigeon with acute polyneuritis.	Observer.
Rice polishing	Natural condition ..	10 grams	H. Chick and E. M. Hume (1917).
Ditto	After extraction with alcohol ...	About 5 grams ...	Funk (1911).
Ditto	After extraction with water followed by extraction with alcohol.	1.5 to 2 grams (daily).	Eijkman (1911).
Wheat germ	Natural condition	1.0 to 2.5 grams ..	H. Chick and E. M. Hume (1917).
Rice germ	Ditto	0.5 to 2.0 ..	Ditto.
Marmite (yeast) Extract A ...	Ditto	1.5 to 2.0 ..	Ditto.
Ditto	Dry weight	1.0 to 1.3 ..	Ditto.

Cooper's (1913) preventive experiments with egg yolk indicate that it is weight for weight about half as rich in anti-beriberi vitamin as wheat germ.

Funk (1911) method for preparing a more potent product from rice polishing involved a further elaborate series of operations, Curative dose 0.25 grams.

Hygiene, 1917, Volume 10; *Proceedings of the Royal Society*, B, 1917, Volume 90.

Note by Sir Havelock Charles, dated 10th June, 1918.

On this matter I spoke to Under-Secretary of State some months ago. A little thought on the part of responsible authorities in the East would have shown:—

1. That rice polishings can be had for nothing in Rangoon, etc., etc.
2. That alcohol is exceedingly cheap in Calcutta.
3. That an alcoholic extract could then be made at a very low rate and the cost, etc., saved from Europe.

Also some little knowledge of the subject (from perusal of Medical and Scientific journals)* would have made the authorities conversant with the action of the germ or embryo of cereals as a preventative of the disease. A despatch from Secretary of State on the prevention of beriberi and scurvy was sent to India last year.

Letter from Dr. A. T. Stanton, Bacteriologist, Institute for Medical Research, Federated Malay States, dated 23rd September, 1918.

SIR.—With reference to your correspondence, P. M. O. 489-1918 (Ch. S. O.—3494-18). I have the honour to forward a Note on the scientific questions raised in a letter addressed to the Under Secretary of State for the Colonies by the Deputy Director of the Lister Institute. I shall be obliged if a copy of this may be forwarded to Dr. Harden through the medium of the Colonial Office. I add for the information of Government some observations on the practical aspect of the question under discussion.

2. Dr. Harden ventures the opinion that "Marmite," a commercial yeast extract and wheat germ, should be used in preference to rice polishings as sources of anti-beriberi substances. Rice polishings of high quality can be purchased in Kuala Lumpur for six cents a kati or less; the materials suggested by Dr. Harden would cost many times as much as pre-war quotation for dried yeast is three shillings six pence per pound.

3. We are now preparing by a specified procedure an alcoholic extract of rice polishings for use in F. M. S. hospitals. This extract has given satisfactory results in Physiological terms. Even if the Lister Institute data were correct, which they are not, we should continue to rely upon rice polishings as a source of anti-beriberi substances. Apart from the impropriety in present conditions of obtaining materials from Europe for which substitute can be obtained locally, Dr. Harden's proposal has nothing to commend it either on scientific or economic grounds.

4. If it could be shown that there was any advantage in substituting yeast for rice meal we have our own sources of this material. Toddy, for example, is merely an emulsion of yeast with sugars, alcohols, etc., and it is, as I have shown experimentally, a source of anti-beriberi substances. It is probable that toddy drinking is a factor in the freedom from beriberi enjoyed by Tamils, an immunity thought to be due only to the character of their rice diet. With the Chinese, "tau-geh" (sprouted beans) is of similar importance when this foodstuff is available.

5. It is improbable, though Dr. Harden's letter suggests it, that the Censor concerned himself with the Lister Institute results on the ground that they might be useful to the enemy as the papers contained information relative to

the health conditions of the troops in Mesopotamia. In so far as the results are accurate, they are not new and it is clear that the facts of the matter were better understood in Germany than at the Lister Institute. So late as October 1914 a review of this subject in an English Scientific Journal attributed to the "Erebnisse der Physiologie" of 1913 observations which appeared in publications from this Institute in 1910.

[Enclosure to preceding letter.]

Memorandum from Dr. A. T. Stanton, Bacteriologist, Institute for Medical Research, Federated Malay States, dated 23rd September, 1918, to the Principal Medical Officer, Federated Malay States, Kuala Lumpur.

1. In a letter addressed to the Under-Secretary of State for the Colonies (Ch. S. O. 3494-18 P. M. O. 489-18) the Deputy Director of the Lister Institute cites an observation published from that Institute in 1917 that 10 grammes of rice polishings natural condition is the curative dose for a pigeon (of say 300-400 grammes weight) with polyneuritis.

As long ago as 1909 it was observed in this Laboratory that 5 grammes of fresh rice polishings sufficed to maintain in health a fowl of 1,200-1,400 grammes weight on a diet of white polished rice. The material was that removed in the milling process from the rice actually used in the feeding the experiment showed that protective substances were present in excess in the original grain. [Fraser and Stanton, *Studies, L.M.R.* No. 1 (1900); *Phil. Jour Sci.*, v. 55 (1910); *Lancet*, II 1755 (1910).]

Similarly Schaumann (*Archiv fur Schiff's u. Trop. Hyg.*, 1910) showed for pigeons of 300-400 grammes weight on a diet of white polished rice that 1.5-2.0 grammes of rice polishings sufficed for protection or cure and that dried-pressed yeast was of about equal value.

These observations though they appear to have escaped notice at the Lister Institute have been so often confirmed here and elsewhere during the past ten years that there can be no doubt of their substantial accuracy.

Rice meals as commercial products differ in their content of the finer meal which is derived in the later stages of the milling process from the supercarpal and aleurone layers of the grain. On the local market there are several grades and the trade name "Rice brand" are rice polish quoted and evidence of these difference. It is also known that rice meal is subject to deterioration from several causes.

I suggest as a probable explanation of the result cited by Dr. Harden that the rice meal used in the tests was an inferior or deteriorated product.

2. The next two observations: "Rice polishings after extraction with alcohol. . . . 5.0 grammes" (Funk 1911) and "Rice polishings after extraction with water. . . . alcohol. . . . 1.5-2.0 grammes" (Eijkman 1911) are in the form cited mis-statements of fact and are wrongly attributed to these authors. The residues of rice polishings after such treatments are inert.

It is probable, however, that Dr. Harden means extracts prepared from rice polishings by treatment with water, alcohol, etc. In the series of experiments referred to above we showed that 0.8 grammes of such an extract was adequate for the protection of fowls of 1,200 grammes weight [*Lancet*, (1) 1755 (1910)] on further purification 0.5 grammes was found to be adequate [(*Studies L.M.R.*, No. 12 (1911).)]

3. The claim that "wheat germ" and "Marmite" have a high value comparable with that possessed by alcoholic extracts of rice polishings, would appear therefore to be ill-founded on scientific evidence.

* *Journal of R. A. M. C.*, August 1917.

Note by Sir Havelock Charles, dated 31st December, 1918.
Revenue and Statistics Department, Letter No. R. and
S. 4650, referred to the Medical Adviser 30th day of
December, 1918.

Dr. Stanton's observations are interesting. He has at
hand rice polishings and toddy and can treat preventively
beriberi. My Note of 10th June, 1918, holds on this matter
and its substance is admitted by Dr. Stanton.

"ILEAL STASIS AND ULCER OF THE STOMACH."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—In the *Lancet* of March 1st Sir Arbuthnot Lane deals
at some length with the relation between ileal stasis and peptic
ulceration of the stomach and duodenum. He points out
that gastro-enterostomy is in a considerable proportion of
these cases unscientific and that traction on the duodeno-
jejunal junction will guide one as to the advisability of per-
forming the ordinary short-circuiting operation.

Any facts bearing on the etiology of ulcer of the stomach
are of paramount importance in relation to carcinoma, seeing
that 25 per cent. of all fatal carcinomata occur in the stomach,
and that approximately 2/3 of these cases show microscopic
evidence of pre-existing ulcer.

It is evident then that ileal stasis comes under grave sus-
picion as an antecedent to carcinoma of the stomach.

The toxic factor has long been recognised in the production
of devitalised areas of mucous membrane, and the injection
of cultures of the colon bacillus in dogs will produce gastric
ulceration, and it is supposed that auto-digestion of patches of
mucous membrane is likely to occur wherever local resis-
tance has been lowered by toxæmia or minute embolic from
some septic focus.

Examination of the appendix is of course a routine proce-
dure in the performance of gastro-enterostomy, and as it is
unusual to meet any one in the service who has not performed
this operation a number of times I venture to address you
with a view to eliciting the opinions of those whose surgical
experience is larger than my own.

If cases of undoubted ulceration of the stomach which have
proved intractable to medical treatment have been submitted
by them to X-ray examination, and the existence of ileal
stasis established and the result has been healing of the ulcer,
it is clear that a very great advance has been made.

My own experience is limited to 20 gastro-enterostomies, in
all of which I noted the appendix region as normal, but the
number is far too small to make generalisation profitable or
even desirable.

As Sir Arbuthnot Lane says, ulceration of the stomach
which has proved refractory to careful medical treatment
does suggest to most of us an operation on the stomach;
and the results have in the past proved eminently satisfactory
(though the difficulty of following up cases in India make
it almost impossible to ascertain how far the benefit is
permanent).

The suggestion that in any considerable proportion of these
cases we have been proceeding on entirely wrong lines made
by a man with Sir Arbuthnot Lane's experience of abdominal
surgery will certainly compel a reconsideration of one's atti-
tude to the surgical aspect of chronic ulceration of the
stomach.

Yours, etc.,

J. S. MATSON,

MAJOR, I.M.S.,

Surgical Specialist, 6th (Poona) Division, Poona.

"OPHTHALMOLOGICAL CONGRESS."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—Will you allow me to bring before the attention of
your readers the Meeting of the Oxford Ophthalmological
Congress which will take place at Oxford on July 9th, 10th
and 11th, 1919.

A large number of officers of the Indian Medical Service
and others of your readers will be in England this summer,
and it is hoped that as many as possible of them will make a
point of attending this Congress, which is international in
character, and which is distinguished by its friendly and
informal proceeding.

There is every prospect of a good programme, and we hope
that a number of American and Colonial visitors, as well as
some from the Allied European countries, will be present.

The members of the Congress are accommodated, at very
reasonable terms, in one of the Oxford Colleges, and the
social side of affairs is not forgotten.

Full information can be obtained on application to
A. Bernard Oridland, Esq.

Salisbury House, Chapel Ash, Wolverhampton.

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I am writing at the suggestion of the Master, Officers and
Council of the Congress, who are desirous of making the
meeting as widely known as possible.

Yours, etc.,

R. H. ELLIOT,

LT.-COLONEL, I.M.S.

(Reid.)

"HERMAPHRODITISM."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—I have great pleasure in reporting the following
case of Pseudohermaphroditism in the hope that it may
interest the readers of your valuable journal.

A patient, aged about 29 years, having all external physical
features of a woman, has been admitted into our hospital
for complete amenorrhœa. She has a long tuft of hair,
fairly well developed breasts, no growth of beard or
moustaches, and she is married. She has always a sort of
dull pain in her abdomen.

On examination we found the following conditions:
She has a short vagina, a slightly elongated clitoris, but
total absence of even a rudimentary uterus. In each
groin there is a mass of about the size of a small areca-nut,
evidently testes with small and narrow epididymes behind
it. They are sensitive to pressure and have descended to the
upper part of the labia majora. Urethra is normal.
Besides this she has an extra tooth (cylindrical) behind the
upper incisors.

P. M. ABRAHAM, L.M.P.

CIVIL HOSPITAL, TRICHOOR:

26th March, 1919.

"SURGICAL TREATMENT OF TUBERCULAR ABSCESSSES."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—In your March issue of the *Indian Medical Gazette*,
I read with surprise the remarks and advice given by
Mr. Gopal K. Tambe, in reference to the surgical treatment
of tubercular abscesses. He states he has often treated
T. B. abscess of large size by his advocated method (*i.e.*,
"Free incision and drainage") without any infective
complication. It may interest Mr. Tambe to know that I
have had a very large experience in these abscesses, and do
not agree with his plan of treatment. These abscesses *always*
become infected, even after the most rigid precautions;
more so when left to a House Surgeon to dress. I have
had T. B. abscesses on the chest become infected (despite
my own rigid aseptic precautions) after inserting a needle
to draw off the contents and introduce tincture iodine.

I have found the best method of treatment to be: free
incision, to scrape the abscess wall thoroughly; rub in iodo-
form, and then to carefully suture up the original incision,
so as to make the cavity air-tight. Finally, to put on a
collodion dressing, and over this wool and a tight
bandage.

In conclusion, I can only say that Mr. Gopal K. Tambe
must be endued with special luck, or else his diagnosis of
those abscesses treated by him, as tubercular, wrong.

Trusting you will be kind enough to insert this letter.

Yours, etc.,

C. EADON-CLARKE,

Late Hon. Surgeon, Battersea General Hospital, etc.,
District Surgeon, B. B. & C. I. Ry.

ABU ROAD:
18th April, 1919.

"EARLY TREATMENT OF MENTAL DISEASES."

To the Editor of THE INDIAN MEDICAL GAZETTE.

DEAR SIR,—The following is an extract from the *Glasgow
Herald* which brings prominently to public notice the
defects that now exist in the present legislation in lunacy.
As Medical Superintendent of an asylum, one repeatedly
meets with cases of early mental disorder which are not
admitted to an asylum until it is too late—thanks to public
sentiment, guided by obsolete legal control. The result is
that an asylum becomes merely a home for incurables, and
I think I am right in saying that conditions are worse in
India than in England.

For the treatment of early cases of mental disorder, the
establishment of small mental wards extramural to and
administered by the nearest asylum becomes a necessity.
Patients could thereto be admitted as voluntary boarders.
It would thus be possible to treat cases without certification

The acute mental case, under section 16 of the Indian Lunacy Act, may be committed to jail—poor devil!
If a few acute kidney or lung conditions were treated in his way the law would soon be remodelled.

Yours, etc.,

W. L. FORSYTH, M.B.,
CAPTAIN, I.M.S.,

Medical Supdt., Ranchi European Asylum.

RANCHI, KANKE:
11th April, 1919.

WAR AND INSANITY.

MENTAL DISEASES AMONG SOLDIERS.

The effect of war conditions on mental disorders was dealt with at some length by Dr. L. R. Oswald, Physician Superintendent, Glasgow Royal Asylum, Gartnavel, at the hundred and fifth annual meeting of subscribers held in the Religious Institution Rooms recently. There had been no increase of insanity, he said, during the last four and a half years. The war was not productive of insanity in the civilian population, but its incidence in the British Expeditionary Force and among troops training at home was considerable. Dr. Oswald indicated some of the methods of treatment carried on at the institution, and expressed the opinion that the experience of the war was certain to lead to better lunacy laws.

LUNACY LAW FORMALITIES.

Soldiers were received without certification of any kind into the military mental hospitals. That was as it should be and the public would not have tolerated it otherwise. When however they are sent to lunatic asylums they are certified as dangerous lunatics (so ran the phraseology of indictment in the Army Act), a procedure as cruel as in the majority of cases it was untrue. Much of the stigma attached to mental disorder was, in his opinion, due to the association in the public mind of the condition with some offence for which before a remedy could be found the sanction of the law had to be invoked: but the experience gathered as the result of the treatment of insane soldiers had opened the eyes of the public, who would, he hoped, insist that legal formalities in the treatment of the insane were abolished, and that every facility was given and provision made for the treatment of mental disorders, without certification. The woman who became depressed and melancholic from the death in battle of her son was as much entitled to consideration as the soldier who became insane in the service of his country. This could only be brought about by the pressure of public opinion. Facilities must be provided similar in character and equal in completeness to those available for purely physical ailments: there must be clinics out-door and indoor for early cases and there must be amendments and revision of the existing lunacy laws. The words lunatic, pauper, and much of the wording of the document on which patients were received were obsolete, and a relic of the time when mental disorders were looked upon as a "possession" and not as a disease. The experience of the war was certain to lead to better lunacy laws. Public opinion must demand for the civilian what was granted to the soldier, and the attitude of the public to insanity was still a strange mixture of superstition, curiosity, and exaggerated fear.

MENTAL HEALTH OF THE NATION.

The magnitude of the struggle through which we had passed had been such that no parallel to it could be found; but history told us that all great wars were invariably followed during the era of reconstruction by efforts to dissolve the social order, and by an increase in mental disorders. A proof of the first part of that contention was seen in the present social and industrial unrest, and we were entering on a time when the suppressed emotions of multitudes would show their effects in an increase of mental illnesses. As contributory causes to this increase of emotional—rather than intellectual—disorders there were the lowering of the national health by the repeated influenza epidemics, and the diminished resistance to disease due to the necessary food restrictions. The spirit of the nation—*mens ægis in arduis*—in the darkest days of the war had been followed by the inevitable reaction, characterised in the mental sphere by emotional instability by impulsiveness, and by a diminution of power for collected reasoning. This was specially marked among those of adolescent years, and was indeed only an accentuation of symptoms occurring at that period, always one of marked mental instability and emotionalism. Till it passed we had—and he spoke only as regards the mentality of the nation—an anxious period ahead, during which we would want all the steadying influences possible, and the help of the best brains in the country. The methods of treatment carried on at the hospital in Gartnavel

years were continued with an average amount of success. Occupation and amusements were encouraged and made as varied as possible. The former was the best mental stimulus; it lessened introspectiveness, diminished restlessness, and led to a saner appreciation by the patient of his own condition, often the beginning of recovery. Psychotherapy—treatment by suggestion, by therapeutic conversation—was often of great value as was the frank discussion with the patient of his own symptoms as they presented themselves to a skilled observer. After all the treatment—medical or moral—must be individual, and suited to the special circumstances of the case. Such psychical treatment—the giving of one's personality to the patient—was often most exhausting to the physician.

"TETANUS."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—With reference to my article on tetanus published in the March number in the Gazette, I would ask you to correct, in your next issue, an error that has crept into the figures. You will see that the total hospital mortality is 33 out of 66, i.e., 50 per cent., as expressed in the article. Excluding my two private cases, we have 51 hospital serum cases, which means that we have to deduct 15 deaths out of the 33. The figure left is 18 and not 28. Again, in striking the percentage, 18 deaths in 53 cases means 33.77 per cent. approximately. These figures were worked by another and I have just noticed them.

J. J. HOSPITAL:
11th April, 1919.

Yours, etc.,
A. J. NORONHA, M.D.

THERAPEUTIC NOTES.

It is of interest from a medical standpoint to observe that the price of the purely British product—Bovril—has not been increased during the war, despite the fact that a great increase has taken place in the raw materials and in the cost of labour. The chemist is justly proud of this and states that it was the duty of a great food company like Bovril not to raise its prices during the terrible years of the war: this was successfully accomplished and all concerned have a right to feel that they have each a share in a laudable and patriotic course of action.

Sir James Oughton-Browne, M.D., stated Bovril had the testimony of all our leading generals that it had proved an inestimable boon and comfort to our men in the trenches, in the field and on the march. Also that it had been the very best physic for our sick and wounded and had helped many a poor fellow stricken with illness, mutilated or suffering from shock, to turn the corner. In the present pandemic of influenza Bovril again was a great restorer of strength, and he regarded it as a great protection against influenza.

Service Notes.

ADMISSION TO THE INDIAN MEDICAL SERVICE.

In supersession of the notification of the Government of India, Military (Medical) Department, No. 477, dated the 22nd May, 1913, the Governor-General in Council is pleased to publish the following rules under which certificates of age and nationality will be issued to natives of India who are candidates for the examinations for the Indian Medical Service held in England:—

General Rules applicable to all candidates.

I. A candidate for admission to compete in England for the Indian Medical Service is required, before leaving India, to obtain a certificate of age and nationality signed, should he be a resident in British India, by the Secretary to Government of the Province, or the Commissioner of the Division, within which his family resides; or, should he reside in a Native State, by the highest Political Officer accredited to the State in which his family resides.

Note.—In the case of a candidate who has proceeded to England without obtaining a certificate, the certificate may be granted to his father or guardian, provided that the latter produces the requisite evidence, and, when making the application states when the candidate went to England and where he has been residing during his stay in that country.

II. In order to obtain a certificate, a candidate is required, if resident in British India, to prove the date and place of birth before the Magistrate of the district in

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which his family resides or, if resident in a Native State, before the Political Officer of the State in which his family resides.

III. A candidate must, if resident in British India, signify to the Secretary to Government of the Province, or the Commissioner of the Division, in which his family resides, his desire to compete, not less than three months before the date on which he proposes to go to England, if resident within a Native State, he must signify his desire in like manner to the highest Political Officer accredited to the State within which his family resides. The officer to whom the application is made shall forward it for the purpose of inquiry to the Magistrate of the district or Political Officer of the State in which the applicant's family resides.

IV. The Magistrate or Political Officer to whom such application has been forwarded shall call upon the candidate to appear and give evidence of the date and place of his birth, and of his nationality, within one month. He will carefully examine into the value of the evidence given, and forward a summary of it, with certified copies of all documents tendered, and his comments and opinion, to the officer who forwarded the application to him for inquiry.

V. The documentary evidence which a candidate may be expected to produce comprises—

- (a) The horoscope.
- (b) Family books.
- (c) Tradesmen's account books showing entries relating to the birth.
- (d) The record of admission in the registers of the school in which the candidate was educated, and the record of the candidate's age at various periodical school examinations.
- (e) If the candidate is matriculated, a certified copy of his application to the Registrar.

Oral testimony of persons acquainted with the candidate's family, or otherwise able to give relevant evidence, will also be taken; and the candidate is required to comply, to the best of his power, with any requisition the Magistrate or Political Officer, as the case may be, may make in order to clear up any doubt as to the purport of the documentary proof.

VI. Any declaration of age made after the application of these rules on the occasion of seeking admission to any university examination, educational institution, or Government office, or otherwise recorded in a formal and deliberate manner, will be taken as conclusive evidence in disproof of the subsequent assertion by the same person that he is of different age to that so declared or recorded.

Rules to apply to candidates born in His Majesty's Dominions.

VII. Where the date and place of birth have been formally registered in a register kept by any public officer in British India, an extract from the register, duly certified by the proper official, shall be accepted as sufficient proof of the date and place of birth.

VIII. In the case of a candidate who and whose father were born in His Majesty's Dominions—

If the Secretary to Government, Commissioner of a Division, or the highest Political Officer accredited to the State, as the case may be, is satisfied by the papers submitted, he will issue a certificate in the following form, setting out the nature of the evidence produced by the candidate:—

I hereby certify that....., who is a candidate for the Indian Medical Service, has submitted the proofs of his birth, detailed below,* and has satisfactorily shown that he was actually born on or about the date stated, viz., the..... day of 19..... at..... a place within His Majesty's Dominions. His father was not born outside His Majesty's Dominions.

IX. In the case of a candidate who, or whose father was not born within His Majesty's Dominions (excluding candidates who are subjects of Native States):—

If the Secretary to Government, Commissioner of a Division, or the highest Political Officer accredited to the State, as the case may be, is satisfied by the papers submitted, he will issue a certificate in the following form setting out the nature of the evidence produced by the candidate:—

I hereby certify that....., who is a candidate for the Indian Medical Service, has submitted the proofs of his birth detailed below† and has satisfactorily shown that he was actually born on or about the date stated, viz., the..... day of 19....., and..... further having ascertained that he†

his father was born outside His Majesty's Dominions, I hereby certify that his

(Here enter details.)

† (Here enter details.)

‡ Strike out as required.

father was at the time of his (the candidate's birth a British § subject

subject of..... State in India, and that such father still is|| a British ¶ subject

continued to be till his death a subject of..... State in India.

X. If the Secretary to Government, Commissioner of a Division, or the highest Political Officer accredited to the State, as the case may be, finds reason to believe that the evidence brought forward is not such as to justify the grant of a certificate in the form set out in Rule VII or Rule IX above, the certificate will be refused and the candidate will be unable to obtain admission to the competitive examination for the Indian Medical Service.

XI. In the case of a candidate who is a subject of a Native State: If the Secretary to Government, Commissioner of a Division, or the highest Political Officer accredited to the State, as the case may be, is satisfied by the papers submitted that the candidate has stated the date and place of his birth and nationality correctly, he will forward the papers with his observations, including any as to the nationality of the candidate's father, to the Government of India who will consider whether a declaration of eligibility shall, with the approval of the Secretary of State, be issued under Section 96 A. of the Government of India Act, 1915.

Note.—A Tamil of Ceylon will be required to produce a certificate of age and nationality, signed by the Secretary to the Government of Ceylon, similar to that referred to in the foregoing regulations, as required from natives of India, and this certificate must show that evidence has been produced that the candidate is the son or grandson of a person born in British India.

OBITUARY.

Lieut.-Colonel Thomas Walter Irvine, Bombay Medical Service, was accidentally drowned in the Kabul river while hunting at Peshawar on 26th January, 1919, aged 53. He was born on 21st October, 1865, the only son of the late Rev. Walter Irvine of Edinburgh, and educated at Edinburgh University where he graduated M.B. and C.M. in 1887. Entering the I.M.S. in 1891, he became Major in 1903 and Lieut.-Colonel in 1911. After five years' military duty, he took civil employment under the Foreign Department of the Government of India in November, 1902, and was then attached to the Sistan Arbitration Commission, which laid down the boundaries between Persia and Afghanistan. In December, 1907, he was appointed Residency Surgeon of Mewar (Udaipur) in Rajputana; in October, 1911, Chief Medical Officer of the North-West Frontier Province, with headquarters at Peshawar, and subsequently acted for a time as Senior Surgeon to the Government of Mysore. He served in the third China war of 1900, receiving the Medal; and in January, 1911, received the Kaiser-i-Hind Medal, 1st class.

Died on Service.

Captain H. C. R. Chondbury, I.M.S.

Captain H. C. R. Chondbury, I.M.S., was reported as having died on service, in the casualty list published on 13th March, 1919. He received a temporary commission as Lieutenant in the I.M.S. on 25th August, 1915, and was promoted to Captain after a year's service.

Captain F. B. Chenoy, I.M.S.

Captain Ferozeshah Bapuji Chenoy, I.M.S., was reported as having died on service, in the casualty list published on 28th February, 1919. He was educated at Bombay University, where he graduated L.M.S. in 1912, and at the London Hospital, taking the diplomas of M.R.C.S. and L.R.C.P., London, in 1913. He entered the I.M.S. as Lieutenant on 1st August, 1914, and was promoted to Captain on 1st August, 1917. He was just thirty years of age.

HONOURS.

Commended for Services.

The following are among the names brought to the notice of the Secretary of State for War for valuable services rendered on the occasion of the sinking or damage by enemy action of hospital ships, transports, and store ships, and for valuable services rendered on hospital ships:—

Lieut.-Colonels: P. B. Haig, I.M.S.; C. Milne, I.M.S.

C.I.E.

The Companionship of the Order of the Indian Empire has been conferred upon the following medical officers in recognition of services in or in connexion with, the military operations in Mesopotamia:

Lieut.-Colonel Philip F. Chapman, I.M.S.

§ Strike out as required.
|| Strike out as required.
¶ Strike out as required.

Majors and Brevet Lieut.-Colonels: James D. Graham, I.M.S.; William H. Hamilton, D.S.O., I.M.S.
Major (temporary Lieut.-Colonel) Cuthbert A. Sprawson, I.M.S.

NEW RATES OF PAY.

We understand that the new rates of pay in the Indian Medical Service are to be calculated by increasing the old grade pay by 33½ per cent., and adding the staff pay of the rank. Upon this basis it appears that pay, as from 1st December, 1918, will be as follows:—

Grade Pay: Rupees a Month.		Proposed Scale of New Grade Pay —namely, Grade + 33½ % + Staff Pay (calculated).	
	Old.		
Lieutenant	350		617
Captain	400		683
„ after 5 years' service ...	450		750
„ „ 7 „ „ „	500		816
„ „ 10 „ „ „	550		883
Major	650		1,016
„ after 3 years as Major ...	750		1,150
Lieut.-Colonel	900		1,550
„ after 25 years' service ...	900		1,600
„ „ specially selected ...	1,000		1,733

We are unable to define the position in relation to the Army Instruction (India) No. 1313 of 19th November, 1918, which provided for the introduction of station hospitals for Indian troops and followers. In Appendix "B" to that Order the grade pay of the officers of the Indian Medical Service in Military employment was set out and certain charge allowances were shown. The instruction came into effect on 1st December, 1918, which is also the date on which the addition of 33½ per cent. to the old rates of grade pay (as set out above) came into effect.

LEAVE PAY.

The Secretary of State for India in Council has approved, with effect from 1st January, 1919, the following revised rates of leave pay for officers of the Indian Medical Service granted leave out of India:—

		Old Rates.
On appointment...	£300 per ann.	£250
After completion of 3 years' service	£350	£250
„ „ 6 „ „	£400	£250
„ „ 9 „ „	£450	£300
„ „ 12 „ „	£500	£300
„ „ 15 „ „	£550	£450
„ „ 18 „ „	£600	£450
„ „ 21 „ „	£650	£600
„ „ 24 „ „	£700	£700

MENTIONED in despatches for distinguished and gallant services and devotion to duty in Mesopotamia by Lieutenant-General W. R. Marshall:—

INDIAN MEDICAL SERVICE.

Captain H. W. Acton, Temporary Captain F. B. Ambler, Major (Temporary Lieutenant-Colonel) W. M. Anderson, M.D.; Lieutenant B. C. Ashton, M.B.; Lieutenant-Colonel W. R. Battye, D.S.O., M.B., F.R.C.S.; Lieutenant-Colonel P. F. Chapman, M.B.; Captain E. Cotter, M.B.; Captain A. M. Dick, M.B., F.R.C.S.; Lieutenant-Colonel A. Fenton, M.B.; Lieutenant-Colonel F. W. Glee, C.I.E., M.B.; Temporary Captain E. A. M. J. Goldie, Major and Brevet Lieutenant-Colonel C. M. Goodbody, C.I.E., D.S.O., F.R.C.S.I.; Major and Brevet Lieutenant-Colonel J. D. Graham, M.B., Major and Brevet Lieutenant-Colonel W. H. Hamilton, D.S.O., F.R.C.S.; Lieutenant-Colonel W. Lethbridge, M.B.; Captain R. B. Lloyd, M.B.; Major F. P. Mackie, M.D., F.R.C.S.; Lieutenant-Colonel H. G. Melville, C.I.E., M.D., F.R.C.S. (Edin.); Major J. Morison, M.B.; Temporary Captain S. B. Mukerjee, Captain J. J. H. Nelson, M.C., M.D., F.R.C.S. (Edin.); Captain C. M. Plumtre, Major E. A. Roberts, D.S.O.; Major (Temporary Lieutenant-Colonel) C. A. Sprawson, M.D.; and Major J. Taylor, D.S.O., M.D.

SUBJECT to His Majesty's approval, the undermentioned officers are permitted to resign their temporary commissions, with effect from the dates specified:—

Temporary Lieutenant Cochand Oommen, 31st December, 1918; Temporary Captain Kandathil Mathulla Mathew, 1st January, 1919; Temporary Captain Ravanamudram Sundaramayyar Harihar Ayyer, 3rd January, 1919; Temporary Captain Sita Nath Ghosh, 4th January, 1919; Temporary Captain Hakim Ahmed Alavi, 5th January, 1919.

1919; Temporary Lieutenant Muhammad Sulaiman Ashraf, 6th January, 1919; Temporary Lieutenant Prafulla Ranjan Das Gupta, 7th January, 1919; Temporary Lieutenant Gopalasamudram Sundara Ayyer Sankara Ayyer, 8th January, 1919; Temporary Captain Sistla Lakshminipathi Somayaji, 10th January, 1919; Temporary Captain Bantwal Rama Bhatji, 14th January, 1919; Temporary Captain Amar Nath Madhok, 16th January, 1919; Temporary Captain Bagepalli Venkatavarada Acharya, 26th January, 1919; Temporary Captain Manmatha Nath Chatterji, 31st January, 1919; Temporary Captain Suresh Chandra Sarkar, 31st January, 1919; Temporary Captain Prandhone Ghosh, 1st February, 1919; Temporary Captain Paresch Chandra Guha, 1st February, 1919; Temporary Captain Jatindra Nath Bal, 16th February, 1919; Temporary Captain Abraham Isaac Simon, 18th February, 1919; Temporary Lieutenant Ram Krishna Chatterjee, 28th February, 1919; and Temporary Lieutenant Kallarackal Mathai Thomas, 1st March, 1919.

LIEUTENANT COLONEL H. S. WOOD, I.M.S., Civil Surgeon, Sibsagar, was granted, under Article 260 of the Civil Service Regulations, privilege leave for one month and 16 days, with effect from the forenoon of the 12th November, 1918.

CIVIL ASSISTANT SURGEON RAJANI KANTA DATTA, in medical charge of the Sadr subdivision, Sibsagar, was appointed temporarily to officiate, in addition to his own duties, as Civil Surgeon, Sibsagar, during the absence on leave of Lieutenant-Colonel H. S. Wood, I.M.S.

CIVIL ASSISTANT SURGEON MIR HIDAYAT ULLAH was appointed to be Professor of Operative Surgery in the King Edward Medical College, Lahore, from the 1st to the 3rd November, 1918.

THE services of Major H. H. Broome, M.B., F.R.C.S., I.M.S., are replaced at the disposal of the Government of the Punjab, with effect from the 3rd November, 1918.

MAJOR H. H. BROOME, M.B., F.R.C.S., I.M.S., is appointed to be Professor of Operative Surgery in the King Edward Medical College, Lahore, substantively *pro tempore* with effect from the 1st November, 1918, until further orders.

DR. W. S. ROBERTSON, M.B., Ch.B., Professor of Operative Surgery in the King Edward Medical College, Lahore, is appointed to be Professor of Materia Medica in that College, *vice* Rai Bahadur Pandit Balkishan Kaul (on leave), with effect from the 1st November, 1918, until further orders.

INDIAN MEDICAL SERVICE.

SUBJECT to His Majesty's approval, Lieutenant-Colonel Arthur Holbrook Nott, M.D., Bengal (supernumerary), is permitted to retire from the service, with effect from the 21st April, 1919.

SUBJECT to His Majesty's approval, the services of temporary Lieutenant Rugh Nath Rai, Indian Medical Service, are dispensed with on account of medical unfitness, with effect from the 17th March, 1919.

SUBJECT to His Majesty's approval, temporary Captain Clifford Antony Leo Mayer, Indian Medical Service, is permitted to resign his commission, with effect from the 13th March, 1919.

INDIAN DEFENCE FORCE.

Personal Staff.

THE Viceroy and Governor-General has been pleased to make the following appointment on His Excellency's Personal Staff, with effect from the 18th March, 1919:—

To be Honorary Surgeon.

Major A. E. J. Lister, M.B., F.R.C.S., I.M.S., *vice* Major E. A. C. Matthews, D.S.O., M.B., I.M.S., tenure expired.

LIEUTENANT-COLONEL A. W. R. COCHRANE, I.M.S., Professor of Medicine, King George's Medical College, Lucknow, to revert to his appointment as Superintendent, King Edward VII Memorial Sanatorium, Bhowali.

MAJOR J. W. D. MEGAW, I.M.S., principal, King George's Medical College, Lucknow, and Professor of Pathology, to hold charge of the duties of the Professor of Medicine, in addition to his own duties as a temporary measure.

IN modification of Paragraph 2 of the Notification in the Finance Department No. 308-Gl. (F. E.), dated the 5th March, 1919, it is notified that Lieutenant-Colonel J. J. Bourke, I.M.S., Assay Master (officiating Mint Master), Calcutta, has been granted, with effect from the 27th February, 1919, privilege leave for 4 months and 26 days and collection of the same for 8 months and 9 days.

CAPTAIN J. A. SHORTEN, M.B., I.M.S., Resident Medical Officer, Medical College Hospital, Calcutta, is appointed to officiate as Professor of Physiology at the College, *vice* Lieutenant-Colonel D. McCay, M.D., I.M.S., with effect from the date on which he assumes charge of his duties.

MAJOR A. W. OVERBECK WRIGHT, I.M.S., whose services have been replaced at the disposal of this Government by the Government of India, to be Superintendent, Lunatic Asylum, Agra.

IN exercise of the power conferred by Section 23 of the Code of Criminal Procedure, 1893 (V of 1893), the Governor in Council is pleased to appoint Colonel F. A. F. Barnardo, C.I.E., I.M.S., Assistant Director of Medical Services (Distribution), to be a Justice of the Peace within the limits of the Town of Bombay.

THE Governor in Council is also pleased, under Section 18 of the said Code, to appoint Colonel Barnardo to be a Presidency Magistrate in the City of Bombay, pending further orders.

INDIAN MEDICAL SERVICE.

WITH reference to Army Department Notification No. 2595, dated the 8th November, 1918, Colonel John Blackburn Smith, C.B., M.B., V.H.S., is absorbed in the authorised establishment of Colonels, with effect from 27th October, 1918, the date from which Colonel John Crimmin, V.C., C.B., C.I.E., V.D., K.H.P., was retained as supernumerary in his rank and grade (Army Department Notification No. 2827, dated the 29th November, 1918).

SUBJECT to His Majesty's approval and with effect from the 27th October, 1918, Lieutenant-Colonel James Jackson, C.I.E., M.B., is promoted to the rank of Colonel, *vice* Colonel John Blackburn Smith, C.B., M.B., V.H.S.

Colonel Jackson's tenure of appointment will reckon from the 9th March, 1919.

WITH reference to Army Department Notification No. 401, dated the 30th April, 1915, Captain Edward Slade Goss, M.C., Indian Medical Service, will take seniority in his present rank from the 29th July, 1914, next below Captain Charles Albert Wood, M.C., M.B., F.R.C.S.E., Indian Medical Service, and next above Captain Percival Sandys Connellan, Indian Medical Service, his previous forfeited service having been restored for good service in the field.

THE King has approved the retirement of the undermentioned Officer of the I. M. S. :-

Lieutenant-Colonel J. W. F. Rait, in consequence of ill health, from 24th January, 1919.

Indian Defence Force, Medical Corps.

THE undermentioned are granted temporary commissions, subject to His Majesty's approval :-

To be Lieutenant-Colonel.

Samuel Arthur Powel, 1st April, 1917.

To be Captain.

John Walker Tomb, 1st April, 1917.

To be Lieutenant.

James Stuart Nicolson, 1st April, 1917.

INDIAN MEDICAL SERVICE.

SUBJECT to His Majesty's approval, temporary Captain Angus MacInnes Ramsay, Indian Medical Service, is permitted to resign his commission, with effect from the 10th April, 1919.

LIEUTENANT-COLONEL J. T. CALVERT, C.I.E., M.B., F.R.C.P., D.P.H., I.M.S., Principal and Professor of Medicine, Medical College, Calcutta, and First Physician to the College Hospital, is granted, with effect from the date on which he may avail himself of it, combined leave for 6 months, *viz.*, privilege leave for 2 months and 12 days, and thereafter furlough on medical certificate under Article 308 (a) of the Civil Service Regulations.

LIEUTENANT-COLONEL B. H. DEARE, M.R.C.P., D.P.H., I.M.S., Professor of Materia Medica, Medical College, Calcutta, and Second Physician to the College Hospital, is appointed to officiate as Principal, and Professor of Medicine, Medical College, Calcutta, and First Physician to the College Hospital, during the absence on leave of Lieutenant-Colonel J. T. Calvert, C.I.E., M.B., F.R.C.P., D.P.H., I.M.S., with effect from the date on which he assumes charge of his duties.

LIEUTENANT-COLONEL E. E. WATERS, M.D., M.R.C.P., I.M.S., Civil Surgeon, Howrah, is appointed to officiate as Professor of Materia Medica, Medical College, Calcutta, and Second Physician to the College Hospital, *vice* Lieutenant-Colonel B. H. Deare, M.R.C.P., D.P.H., I.M.S., with effect from the date on which he assumes charge of his duties.

IN supersession of the Home Department Notification No. 12, dated the 27th March, 1919, Lieutenant-Colonel D. McCay, M.D., I.M.S., Professor of Physiology, Medical College, Calcutta, is appointed to officiate as Professor of Materia Medica at that College, and Second Physician to the College Hospital, *vice* Lieutenant-Colonel B. H. Deare, M.R.C.P., D.P.H., I.M.S., with effect from the date on which he assumes charge of his duties.

SUBJECT to His Majesty's approval, the services of temporary Lieutenant Madhusudan Babaji Mandhale are dispensed with, with effect from the 9th March, 1919.

CAPTAIN P. G. MAGUIRE, R.A.M.C., military medical officer, to hold civil medical charge of Roorkee, in addition to his own duties, *vice* Major G. F. Dawson, R.A.M.C.

LIEUTENANT-COLONEL H. J. WALTON, I.M.S., whose services have been replaced at the disposal of this Government by the Government of India, to be Civil Surgeon, Saharanpur.

THE services of Lieutenant-Colonel C. H. L. Meyer, I.M.S. (retired), are replaced at the disposal of the Government of Bombay, with effect from the date on which he is relieved of his military duties.

THE following Notification by the Government of India, Army Department, is republished :-

THE following promotion is made, subject to His Majesty's approval, with effect from the date specified :-

To be Major-General.

Colonel William Ernest Jennings, M.D., *vice* Major-General R. W. S. Lyons, M.D., K.H.P., retired; with effect from the 11th January, 1919.

MR. ISA CHARN CHANDU LAL, O.B.E., I.S.O., made over charge of the duties of Superintendent of the Borstal Central and Female Jails at Lahore to Major W. T. Finlayson, D.S.O., I.M.S., on the forenoon of the 10th March, 1919.

LALA AMAR DAS SETHI, M.B., B.S., made over charge of the duties of Medical Officer of the Borstal Central and Female Jails at Lahore to Major W. T. Finlayson, D.S.O., I.M.S., on the forenoon of the 10th March, 1919.

IN exercise of the powers conferred by Regulation XI (a) of the Regulations for the nomination and election of members of the Legislative Council of the Chief Commissioner of Assam, the Chief Commissioner, with the sanction of the Governor-General, is pleased to nominate Colonel John Garvie, M.B., I.M.S., to be a member of his Council in place of the Hon'ble Colonel H. E. Banatvala, C.S.I., K.H.S., I.M.S., resigned.

MAJOR W. LAPSLEY, I.M.S., whose services have been replaced by the Government of India at the disposal of this Government, to officiate as Deputy Sanitary Commissioner, IV Range, as a temporary measure.

MAJOR W. LAPSLEY, I.M.S., Officiating Deputy Sanitary Commissioner, IV Range, to be Civil Surgeon, Gonda.

MAJOR L. B. SCOTT, I.M.S., whose services have been replaced at the disposal of the Assam Administration, is appointed to be Civil Surgeon, Khasi and Jaintia Hills, with effect from the forenoon of the 17th March, 1919.

Dated the 24th March, 1919.

LIEUTENANT-COLONEL F. H. G. HUTCHINSON, M.B., I.M.S., Sanitary Commissioner, Bombay, is appointed to officiate as Sanitary Commissioner with the Government of India, with effect from the 1st March, 1919.

SUBJECT to His Majesty's approval, Lieutenant-Colonel Frederic Pinsent Maynard, M.B., F.R.C.S., Bengal (supernumerary), is permitted to retire from the service, with effect from the 10th March, 1919.

SUBJECT to His Majesty's approval, Lieutenant-Colonel Selby Herriot Henderson, M.B., Bengal (supernumerary), is permitted to retire from the service, with effect from the 31st March, 1919.

INDIAN MEDICAL SERVICE.

DHANJIBHOY PESTONJI SETHNA, M.D., L.M.R.C.P., is granted, subject to His Majesty's approval, the temporary honorary rank of Captain while employed in the Colaba War Hospital, Bombay. Dated 6th January, 1919.

THE services of Major J. C. G. Kunhardt, I.M.S., an officer of the Bacteriological Department who has recently reverted from military duty, are placed at the disposal of the Government of Bombay.

THE services of Major E. O. Thurston, Indian Medical Service, an officiating Agency Surgeon of the 2nd class, are placed at the disposal of the Home Department, with effect from the 17th March, 1919.

MAJOR F. NORMAN WHITE, C.I.E., M.D., I.M.S., substantive *pro tempore* Sanitary Commissioner with the Government of India, is granted privilege leave for six months with furlough for three months in continuation with effect from the date on which his deputation to the Inter-Allied Sanitary Conference at Paris ceases.

THE services of Major J. Cunningham, M.D., I.M.S., Assistant Director of the Central Research Institute, Kasauli, are placed at the disposal of the Government of Madras.

LIEUTENANT-COLONEL F. H. G. HUTCHINSON, M.B., I.M.S., Sanitary Commissioner, Bombay, is appointed to officiate as Sanitary Commissioner with the Government of India, with effect from the 1st March, 1919.

THE following promotions are made, subject to His Majesty's approval:—

Temporary Lieutenants to be Temporary Captains.

Govind Shivram Mandlik, M.B., 28th June, 1918; Har Gobind Dayal Mathur, M.B., 30th June, 1918; Ram Narain Sud, M.B., 1st July, 1918; Jehangir Cursetji Bharucha, M.B., 7th July, 1918; Sher Singh, M.B., 9th July, 1918; Hirnaya Kumar Sen, 24th July, 1918; Shapoor Dinsha Vania, 4th August, 1918; Peruvemba Ayyasami Acher Ramanathan, 10th October, 1918; Kshetra Mohan Ray, M.B., 1st November, 1918; Satindra Chandra Basu, 28th November, 1918; Bidhu Bhushan Chatterjee, M.B., 29th November, 1918; Padmanabha Rangappa Bhandarkar, 2nd December, 1918; Raghupati Banerji, M.B., 3rd December, 1918; Kaikhusroo Rustomji Dalal, 8th December, 1918; Susanta Kumar Sen, M.B., 8th December, 1918; Kantilal Kalyanji Mankodi, 12th December, 1918; Suresh Chandra Sarkar, M.B., 14th December, 1918; Amar Nath Madhok, M.B., 17th December, 1918; Bantwal Shankar Rao, 19th December, 1918; Gopal Krishna Ramrao Padbidri, M.B.; 23rd December, 1918; Pascal DeSouza, 24th December, 1918; Jehangir Hormasji Clarke, 28th December, 1918; Keralapuram Sreenivasa Subramanyam, 29th December, 1918; and Duriseti Narayanarao, 31st December, 1918.

INDIAN ARMY RESERVES.

ON being relieved by Major E. J. C. McDonald, I.M.S., Civil Assistant Surgeon, Lakshmi Prasad Chaliha, Officiating Civil Surgeon, North-East Frontier, is granted privilege leave for one month and 24 days, under Article 260 of the Civil Service Regulations.

INDIAN MEDICAL SERVICE.

THE following promotions are made, subject to His Majesty's approval:—

Captain to be Majors.

Vivian Bartley Green-Armytage, M.D.; Arthur Norman Dickson, M.C., M.D.; Alexander Glover Coullie, M.B., F.R.C.S.E.; Alexander James Hutchinson Russell, M.D.; Dewan Hakumat Rai, M.C., M.B.; and William Hunter Riddell, M.C., M.B.; Dated 27th January, 1919.

Temporary Lieutenants to be Temporary Captains.

Har Sukh Rai, M.B., 23rd January, 1918; Nawab-ud-din, M.B., 27th March, 1918; Manual Joseph Saldanha, M.B., B.S., 7th June, 1918; Yeshwant Vaman Mudak, 17th September, 1918; Ragavan Cheruvuri Toyle, 1st October, 1918; Abdul Kadir Muhammad Mahiuddin, 8th January, 1919; Alexander Noble, M.B., 8th January, 1919; Joy Devananda Sinha, M.B., 9th January, 1919; Dinesh Chandra Chakrabarti, F.R.C.S.E., 12th January, 1919; Ravu Venkata Rao, 18th January, 1919; Annaswamy Muthukrishnan, 18th January, 1919; Sadashiva Ohintamon Lele, 19th January, 1919; Jagdish Chandra Gupta, M.B., 25th January, 1919; Coimbatore Srinivasa Rao Venkata Krishna Rao, 26th January, 1919.

LIEUTENANT-COLONEL R. G. TURNER, I.M.S., Civil Surgeon, Fyzabad, to officiate as Inspector-General of Prisons,

United Provinces, as a temporary measure, *vice* Lieutenant-Colonel S. H. Henderson, I.M.S., retired.

MAJOR J. F. BOYD, I.M.S., Military Medical Officer, to hold civil medical charge of the Fyzabad district in addition to his own duties, *vice* Lieutenant-Colonel R. G. Turner, I.M.S.

THE services of Major E. O. Thurston, M.B., F.R.C.S., I.M.S., are replaced at the disposal of the Government of Bengal, with effect from the 17th March, 1919.

LIEUTENANT-COLONEL J. M. WOOLLEY, M.D., I.M.S., to be Inspector General of Prisons, United Provinces, with effect from the 8th April, 1919.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements, and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to "*The Indian Medical Gazette*," Rs. 14, including postage, in India. Rs. 16, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED:—

- Annual Report: Public Health Department, Srinagar Municipality, 1917-18.
- Publication of the South African Institute for Medical Research, No. XI 1917.
- Report on the Working of the Micro-biological Section of the King Institute of Preventive Medicine, Guindy, 1918.
- Manual of Bacteriology: Muir and Ritchie, VII, 1st Edition, 1919.
- Annual Report: Medical Mission, Ranaghat, 1918.
- Seventh Annual Report of the London Dermatological Society, 1919.
- Annual Report: Rockefeller Foundation, 1917.
- Aids to Surgery: Joseph Cumming and C. A. Joll. Messrs. Baillière, Tindal and Cox.
- Nerves of the Human Body: C. R. Whittaker. Messrs. E. and S. Livingstone.
- Essentials of Medical Electricity. E. R. Morton, M.D. By E. P. Cumberbatch. Mr. H. Kempton.
- Genito-urinary Diseases and Syphilis. By H. H. Mortou. 4th Edition. Mr. H. Kempton.
- Science Progress. No. 51, January, 1919.
- Chronic Rheumatic Osteomyelitis: Its Pathology and Treatment. By J. Renfrew White, M.S. Messrs. H. K. Lewis & Co., Ltd., London.
- Catalogue of Lewis's Medical and Scientific Circulating Library. New Edition, 1917.
- The War Work of the Y. M. C. A. in Egypt. By James W. Barrett, M.D., F.R.C.S., etc. H. K. Lewis & Co., London.
- Short Notes and Mnemonics of Anatomy. By A. S. Irving. E. & S. Livingstone. 1919.
- Students' Pocket Prescriber and Guide to Prescription Writing. By D. M. McDonald, M.D. E. & S. Livingstone. 1919.
- Catechism Series: Chemistry, Anatomy, and Operative Surgery. E. & S. Livingstone. 1919.
- Administration Report of Ajmer-Merwara, 1917-18.
- E. I. Railway Report on Influenza, 1919.
- Report of War Relief Work in the Bombay Presidency. By Major-General W. E. Jennings, I.M.S.
- Administration Report of the Punjab and its Dependencies 1917-18.
- New Chemical Industries. By I. C. Ghosh. Butterworth & Co.
- Elements of Surgical Diagnosis, 5th Ed. Pearce Gould. Cassell & Co.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM:—

Colonel R. H. Elliot, I.M.S. (retd.), P. M. Abraham, Cochin; Lt.-Col. E. Hasell Wright, Coorg; Major Matson, Poona; Lt.-Col. J. Wall, I.M.S., Bangalore; Major-Genl. W. E. Jennings, Poona; Dr. Neve, Kashmir; Dr. Waters, E. I. Ry., Allahabad; Capt. D. J. Harris, R.A.M.C., Ambala; Lt.-Col. Entrican, I.M.S., Burma; C. E. Clarke, District Surgeon, Abu Road; Messrs. Butterworth & Co. (India); Dr. Ashutosh Roy, Hazaribagh; Dr. Waters, C.M.O., E. I. Ry.; Capt. Forsyth, I.M.S., Ranchi.

Original Articles.

SAND-FLY FEVER AND ITS RELATIONSHIP TO DENGUE.

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SAND-FLY FEVER is generally regarded as being distinct from dengue.

Are there sufficient grounds for this view?

To show that this question is not merely one of academic interest it is only necessary to refer to Manson's "Tropical Diseases," in which the following diseases are described:—

I. "Dengue."

II. "Phlebotomus Fever" (otherwise known as "Sand-Fly Fever," "Pappataci Fever," and "Three-Day Fever").

III. "Seven-Day Fever of Indian Ports."

In the previous edition there was also described as a separate entity the "Three-Day Fever of Chitral," this is now included in the description of phlebotomus fever.

The above three fevers are not even grouped together, and the numerous students who obtain their knowledge of tropical diseases from Manson's excellent book are compelled to make themselves familiar with the accounts of all the three fevers. If, as there is good reason to believe, these three fevers are clinically indistinguishable from each other, much confusion would be avoided by grouping them together. If, on the other hand, the diseases are really different from each other, it is important that the points of distinction should be stated in a clear and definite manner.

Between the years 1906 and 1909, in Calcutta, I took part in a discussion as to the nature of the seven-day fever and incidentally of the three-day fever of Chitral, and at the time I produced evidence which satisfied myself, if not other people, that there were no sufficient grounds for separating these fevers from the old established clinical entity "Dengue."

During the ten years that have elapsed the seven-day fever has come to be generally regarded as dengue, but the three-day fever under a new name has established itself in the medical world as an independent disease.

Its right to this position of independence has been challenged several times, and even now the French physicians usually refer to it as "Mediterranean Dengue," but most English doctors accept it without question as a distinct disease.

A silence of more than ten years is my chief justification for returning to the discussion

There is a tendency among medical investigators as well as among biologists to ask for the acceptance of new names which they desire to apply to types differing very slightly from the existing recognized types.

This makes for complexity if not for confusion, and so it is necessary that every new term that is suggested should be submitted to a strict scrutiny before being accepted.

Even if an old familiar name is indefinite and unscientific, it has a great advantage over a new name that is equally indefinite and unscientific.

It seems reasonable to demand that no disease should be accepted as a new and distinct entity until it has been shown to be specifically different from each of the generally recognized diseases.

A very good example of the confusion and complication that arise from the ready acceptance of new names is seen in the following recent additions to the list of diseases:—

"Three-Day Fever," "Sand-Fly Fever," "Phlebotomus Fever," "Pappataci Fever," "Seven-Day Fever," and "Six-Day Fever," etc.

There would appear to be a case for the appointment of a standing committee for the examination of the claims of all who aspire to the placing of a new name in the catalogue of diseases.

A BRIEF HISTORY OF THE DENGUE GROUP OF FEVERS UP TILL 1902.

Fifteen years ago the only name that was generally recognized as applying to the fevers already referred to was dengue, but a glance at Mense's *Hand-book of Tropical Diseases* will show that even then dengue possessed a formidable list of "aliases." There were about a hundred of these, of which about fifty were in English. It is clear that either "dengue" was a name applied to a number of distinct clinical entities or that the inventors of new names for old diseases were already at work.

Dengue has been clearly recognized for about 140 years, but the first clear account of its existence in India was in 1824, when it appeared in Calcutta and spread rapidly over the greater part of India. Scarcely any one in Calcutta escaped, so it is evident that the population was very susceptible to the disease. This may have been because it had been absent for a considerable time or because it was new to India and had been enabled to reach the country by the increased speed of overseas communication with other countries of the east.

Again in 1871-73 dengue appeared in epidemic form in Calcutta and spread rapidly over the greater part of India. Between these two epidemics there were several milder epidemics, in some of which severe pains are stated to have been absent.

In 1897 Bassett Smith described dengue in Bombay, and in 1902 a severe outbreak reached Madras and Burma from Hong Kong, but there is no evidence of the disease having spread to the other parts of India.

For this very brief summary, I am indebted to the account given in Sir Leonard Rogers' epoch-making book on fevers in the tropics.

The original accounts of dengue show many differences between themselves and it is clear that the diseases either assumed a variety of forms, or, as Rogers thinks, that two diseases were described, one of which was dengue and the other seven-day fever.

HISTORY OF DENGUE AND THE ALLIED FEVERS FROM 1902 ONWARDS.

In 1902, James in his enquiries into malaria in Mian Mir noted the existence of a large number of short non-malarial fevers whose charts he published without notes.

In 1905, Sir Leonard Rogers definitely recognized the existence of a specific short non-malarial fever in Calcutta which he first described as an "Influenza-like Fever" and later as the "Seven-Day Fever of Calcutta."

In the *Indian Medical Gazette* of January 1906, McCarrison gave a clear and definite account of the "Three-Day Fever of Chitral." He found many points of similarity with dengue but concluded that "the absence of a rash and of terminal fever made it impossible to consider the disease dengue."

In the *Indian Medical Gazette* of November 1906, I described two attacks of fever of the seven-day type, from which I had suffered, and gave my reasons for thinking these to be dengue. In that paper the following classification of dengue as seen by me in Calcutta was given:—

I. The continued type of 6 or 7 days' duration, showing a terminal rise.

II. The interrupted type, showing a fever-free interval.

III. The short fever type, lasting less than four days and showing no marked terminal rise.

IV. The afebrile type, occurring in persons who are nearly immune. By attacks of this type of the disease it was thought that immunity was maintained among persons who live in endemic areas.

In this paper it was stated that "there is reason to suspect that dengue in some of its forms is not uncommon in some of the inland stations of India."

In the *Indian Medical Gazette* of February 1908, Lieutenant-Colonel Fooks, I.M.S., described an epidemic of dengue at Sialkot in which the seven-day and three-day types of fever occurred in approximately equal numbers. This was most important confirmatory evidence of

my views as to the existence of the long and short types of dengue, especially as the author did not appear to have read my paper.

In 1907, Ashburn and Craig, in the *Philippine Journal of Science*, described an outbreak of dengue which they believed to be conveyed by the *Culex fatigans* (the evidence is not convincing). They showed that dengue is due to an invisible virus and their account left little room for doubt that they were describing the same disease as was known as the "Seven-Day Fever of Calcutta": the charts in themselves being almost conclusive on this point.

In 1908 and 1909, Doerr described a fever in Southern Austria which obviously resembled the "Three-Day Fever"; he found that it was due to a filtrable virus and that it could be conveyed by the *Phlebotomus papatassii*.

In January 1909, in the *Indian Medical Gazette*, I summarized the available evidence and came to the following conclusions:—

"I. That the term dengue can properly be applied to the Seven-Day and the Three-Day Fever.

II. That dengue exists in most parts of India and perhaps in many parts of the tropics as an endemic fever, assuming a great variety of forms."

In this paper was given a new description of dengue, which embodied the conclusions arrived at by a study of the literature and of the outbreaks which had been described by others or seen by myself.

This description does not seem to require revision in any important respect except that the part played by the *Phlebotomus* and by the *Stegomyia* was not known to me at the time. (The paper was written before the account of Doerr's work had reached India.)

In 1910, Birt gave a clear account of "Phlebotomus Fever" in Malta and Crete; in this outbreak the three-day type appears to have preponderated.

In September 1911, Captain Munro, I.M.S., described in the *Indian Medical Gazette* an outbreak of dengue among fever the Indian troops in Alipore, Calcutta. In this about half the cases were of the seven-day type and half of the three-day type.

He also described an outbreak among British troops in Calcutta, which occurred at the same time; in this out of 55 cases 40 were of the seven-day type and 15 of the three-day type. He concluded that there was *prima facie* evidence that these pyrexias were a single disease, viz., dengue.

In a thesis written at the same time he went into the question in great detail and produced a great mass of evidence which had carried him to the same conclusion as had been reached by me some years previously.

Castellani, in his well-known text-book (1913), states that "Pappataci Fever" can only be distinguished from dengue by ending on the third day.

He also says "in our opinion the Seven-day fever is Dengue or a variety of it. Having had the opportunity of seeing Dengue in the Phillipine Islands and other countries where the disease is common, we find that the condition called Seven-day fever in India and Ceylon is clinically identical with it."

In the *British Medical Journal* in 1915, Col. Birt again writes on sand-fly fever or phlebotomus fever and quotes an interesting group of figures relating to his own cases in Malta and to Wimberley's cases:—

Duration in days	2	3	4	5	6	7 or 8
	%	%	%	%	%	%
Malta ...	20	30	23	12	9	5
Wimberley's ...	...	22	27	24	20	6

In his paper Birt lays special stress on the rash as the point by which dengue can be distinguished from phlebotomus fever.

Capt. Houston, R.A.M.C., in the same number of the *British Medical Journal*, after describing an outbreak of three-day fever in Peshawar mentions a seven-day fever as occurring sporadically during the summer months in Peshawar; in this fever a rash is sometimes seen. He distinguishes these cases from sand-fly fever as being more sporadic and as being of more than three days' duration.

In the *Indian Medical Gazette* of December 1916, Capt. Harnett, I.M.S., makes a critical analysis of the subject and gives numerous blood counts. The cases seen by him showed the following distribution as regards duration of the attack:—

Number of days	...	2	3	4	5	6	7
Per cent.	...	48.8	33.6	7.2	4.6	3.8	2

His conclusions closely agree with mine as will be seen from the following parallel columns:

Megaw, <i>Indian Medical Gazette</i> , January, 1909.	Harnett, <i>Indian Medical Gazette</i> , December, 1916.
The chief aim of the foregoing paper is to show that the term dengue can properly be applied to the fevers in India known as seven-day fever and three-day fever.	I am unable to fix any point by which the two (dengue and sand-fly fever) may be distinguished. Much of the available evidence seems to point to the conclusion that we are dealing not with two closely related fevers but with one and the same fever modified by circumstances as yet unknown

It is of course assumed in the above comparison that three-day fever and sand-fly fever are the same.

In December 1916, in the *Bull. Soc. Path. Exot.*, Sarrhailhe writes on "Dengue et Fievre de Trois Jours," he points out that in many

outbreaks of dengue, eruption and secondary fever are absent, while sometimes the eruption is present without the secondary fever and *vice versa*. The disease referred to was observed in Macedonia. He noticed in Salonika a short fever with an eruption like dengue, coinciding with the appearance of sand-flies, the duration was usually three days, rarely five; there were occasional relapses on the 4th or 5th day.

At about the same time another French authority, Arman Delille, describes the three-day fever in Salonika; he says that the eruption was common, while in the cases seen in the Dardenelles the eruption was rare.

In the *New Orleans Medical and Surgical Journal* of February 1917, King describes the types of dengue seen in Porto Rico. Again it is interesting to notice the close correspondence between his types and those described by me eight years previously:—

King—Porto Rico, 1917.	Megaw—Calcutta, 1909.
I. "Evanescient."	"Evanescient."
	"Short fever type."
II. "Interrupted fever" type.	"Interrupted fever" type.
III. "Saddle Back type" (Rogers).	"Saddle Back type" (Rogers).
IV. "Fever without remission."	"Continued fever type."

I have not seen King's original article. My information is taken from an extract in the *Indian Medical Gazette* of June 1917.

In the *Journal of Tropical Medicine and Hygiene* for August 1917, Castellani says "Dengue cannot be distinguished from Pappataci fever during the first two days, as the symptoms of the two diseases are identical, including the leucopenia. On the third day the fever generally drops in both maladies, but whereas in Pappataci fever the temperature often remains normal,—though there are many exceptions—in Dengue very often there is again slight fever. Moreover, in Dengue, when the temperature falls on the third day, the typical rash of Dengue appears during the crisis or soon after."

Archibald, in the *Journal of Tropical Medicine and Hygiene* of June 1917, describes an outbreak of seven-day fever in the Soudan. He divides the cases into two types, one clinically resembling dengue and the other a short abortive form very like the three-day fever of Chitral. He believes *Stegomyia* to be the transmitting agency.

In the *Journal of Hygiene* for January 1918, Cleland and Bradley have a very important article on the subject of dengue in Australia.

They have proved that the *Stegomyia fasciata* is capable of carrying the disease, and they criticise the evidence on which rests the view that *Culex fatigans* is the insect responsible.

The paper should be read in the original form by all who are interested in dengue.

Bonne, in the September 1918 number of the *Journal of Tropical Medicine and Hygiene*, describes what he calls a dengue-like fever in Dutch Guiana, most of the cases of which were of six or seven days' duration, but there were also cases of three days' duration, and also cases of ten to fourteen days, ending by lysis. He says that the rapid recovery and the mildness of the pains were unlike true dengue, and in many ways the disease more nearly agreed with the six-day fever of Panama and the seven-day fever of India.

He also "*considers it advisable to separate these dengue-like fevers from true dengue until the causative organism is found and differentiation made more easy.*"

This contention shows that the heresy still lives of regarding varying types as being distinct entities until they have been proved to be the same.

Buckeridge, in the *Journal of the Royal Navy Medical Service* for July 1918, describes an epidemic of sand-fly fever in a ship on the East Indian Station. The duration of the fever was six or seven days and a terminal rise of fever was noticed, but he considers that the absence of rash and slowness of the pulse distinguishes the fever from dengue.

There have been several other accounts of phlebotomus fever from the Mediterranean zone; most of these consist of clinical accounts of the disease with little that is new, but show how variable are the symptoms of the disease.

Adrien describes the disease in Syria as "Dengue Mediterranee," and Lambert describes a very similar disease as "Phlebotomus Fever" in Lemnos.

Lambert describes the duration of the fever as being—

3 days	4 days	5 days.
14%	31%	29%

The Differentiation of the Short Fevers of the Dengue Group.

Ten years ago the interest in this subject centered chiefly in the seven-day fever of Calcutta, and thanks to the powerful advocacy of my friend Sir Leonard Rogers, the medical profession of Calcutta was convinced that this fever was a separate entity; in fact my confrères became almost impatient with me for persisting in the belief that it was a form of dengue.

A few years later, owing to the arrival of an epidemic of the disease in which the break-bone pains and the rash were often pronounced, there was an entire reversal of opinion, and now few continue to regard the seven-day fever as distinct from dengue, though the articles by Bonne and Buckeridge indicate a definite tendency to revive Rogers' views. Those who are interested in the subject will find one side of the case stated in Rogers' work on fevers, while

the other side is stated in the papers by Munro and myself.

At the present time a more important practical question is the nature of phlebotomus fever otherwise known as sand-fly fever.

At first sight most people consider it to be so different from dengue that they cannot imagine the existence of any doubt on the subject. But when we look into the matter more closely, we find, as did McCarrison, that the differences dwindle down in a surprising manner. In fact, if one starts with the preconceived idea that the two diseases are different, and if he then proceeds to search for points on which to base a differential diagnosis, he is likely to find himself left at last with one or two points to which he is probably tempted to cling desperately lest he should have to give up his cherished opinion.

In any enquiry into sand-fly fever the first authority who should be consulted is McCarrison, who gave the first clear account of the fever under the name of the "Three-Day Fever of Chitral." If the disease should turn out to be a separate, one it seems to me that the name of McCarrison should be associated with it.

During the early discussion McCarrison rebuked me for assuming too lightly that the disease was the same as dengue, my view being that it is much safer to class a disease provisionally in a recognised group than to launch a new disease on the world. The onus of proof should lie entirely on the person who suggests the introduction of a new name.

But if the name suggested by McCarrison had to be dropped because the fever was by no means universally of three days' duration and was by no means confined to Chitral, it is not at all certain that the new name "Phlebotomus Fever" will stand the test of time. For there are several people who suggest that the fever is sometimes carried by other insects than the Phlebotomus.

The authorities who consider sand-fly fever to be distinct from dengue rely for the most part on the duration of the fever and on the rash for the differential diagnosis between the two conditions. Birt does not attach importance to the duration of the fever but lays special stress on the rash.

DURATION OF THE FEVER.

The following are some of the references to this point:—

Dengue.

Author.	Locality.	Statement as to duration.
Kennedy	India	"The third day critical."
Cavell	Do.	"36 hours."
Twining	Do.	"Falls after the third day."

Dengue—(contd.)

Author.	Locality.	Statement as to duration.
Raye ...	India ...	"Falls on the third day."
Charles ...	Do. ...	"Two days, occasional slight rise on the 4th-6th day."
Leichtenstern ...	General ...	"Three days" (no reference to secondary fever).
Manson ...	Do. ...	"One to four days with terminal rise on the 4th-7th day for a few hours after an interval free from fever."
Scheube ...	Do. ...	"Sometimes a renewed rise for a few hours from the 3rd-5th day."
Ashburn and Craig	Philippines	Most cases are of the long seven-day type.
Dengue Committee	Brisbane ...	"Four to six days, seldom longer."
Cleland and Bradley.	Australia ...	"Three to seven days."

Compare with this,—

"Sand-fly Fever."

Authority.	Locality.	Described duration.
Doerr ...	S. Austria ...	"2-3 days with secondary fever sometimes about 24 hours after the end of the first rise."
Birt ...	Malta; Crete	"27 per cent. were of more than three days' duration."
Gerrard ...	Malta ...	"42 cases showed the saddle-back type."
McCarrison ...	Chitral ...	"Of 78 cases only 9 showed a return of persistence of the fever after 3rd day."
Lambert ...	Lemnos ...	"4 days in 29 per cent., 5 days in 31 per cent. (In only 14 per cent. 3 days.)"
Wall ...	Chitral ...	"Some cases showed a relapse on the 6th or 7th day."
Buckeridge ...	East Indies	"Six or seven days."

Then take some of the outbreaks, the nature of which is in dispute,—

? "Seven-Day Fever" : ? "Dengue."

Authority.	Locality.	Duration.
Rogers ...	Calcutta ...	About seven days.
Megaw ...	Ditto ...	1 to 7 days.
Fooks ...	Sialkot ...	65 cases, "3 days"; 75 cases, "7 days"
Munro ...	Calcutta ...	About equal numbers in the three-day and seven-day groups.
Bonne ...	Dutch Guiana.	Mostly 6 or 7 days. Some 3 days. Some 10-14 days.

A glance at the above tables will show that the duration of the disease will not serve as a means of diagnosis between sand-fly fever and dengue.

It is a curious fact that in the original discussion with Sir Leonard Rogers he insisted

that the seven-day fever could not be dengue as dengue was always described as a fever of three or four days' duration. Now I have to face the argument that sand-fly fever cannot be dengue, because the latter is a fever of longer duration.

It is quite clear that dengue may be a fever of less than three days' duration or a fever of three to seven days, and also that sand-fly fever may be a fever of four to seven days' duration as well as of three days or less.

In certain epidemics the short or the long type of fever predominates, but in many epidemics they occur in about equal numbers.

It might be argued that when numbers of cases of the two types occur at the same time we are really dealing with two distinct diseases occurring simultaneously, but if this were so, some of the writers would be sure to mention the occurrence of both types of fever in the same person at short intervals.

The absence of any reference to such occurrences strongly suggests that an attack of the short fever protects against an attack of the longer fever and *vice versa*.

This constitutes very strong evidence of the fevers being either the same or at any rate of their being very closely related to each other.

It is clear that the duration of the fever cannot be relied on to distinguish between dengue and sand-fly fever.

My personal view of the fever is that it is of the relapsing type and that in some epidemics the relapse is uncommon while in others it generally occurs.

The factors which influence the occurrence of the relapse may be (1) the virulence of the infective agent, and this may to some extent depend on the insect which is responsible for conveying the infection or on climatic conditions; (2) the presence or absence of partial immunity among the persons attacked.

THE RASH.

In diseases in which there is a characteristic rash great stress is rightly laid on this as a point in diagnosis, and for this reason much attention has been paid to the search for the rash in all cases where dengue is a possible diagnosis.

Two rashes have been described in dengue, the primary and the secondary. The primary is not really characteristic; it consists essentially of a flushing of the face and neck and chest, so that little stress is laid on it. Nobody claims that it will serve as a point of distinction between dengue and sand-fly fever; in fact, it appears to be equally marked in the two diseases, so that it may fairly be taken as a point in favour of the identity of the diseases.

The distinctive rash is the one that appears on the 4th to the 6th day; this usually comes with

the secondary rise of temperature when this rise occurs.

Nearly all the older writers lay stress on the rash; Manson and Scheube both say that it is usually present. In the Brisbane Epidemic it was said to be present in half the cases but sometimes doubtful.

Ashburne and Craig, in the Philippines say, that it was "often very faint, they *believe* that they saw it in 75 per cent. of the cases."

On the other hand in the Calcutta form of the disease (if this is admitted to be dengue) Rogers noticed it in only 7 per cent. of the cases, though he recognised only the "seven-day fever" cases as belonging to the clinical entity described by him.

Rogers' experience agreed closely with my own, and though it was in the interest of my contention to discover a rash in a larger number of cases, I never disputed Rogers' figures as to the incidence of the rash.

Cleland and Bradley say that the rash is often overlooked, "in several cases we could not make up our minds as to whether a rash was or was not present."

McCarrison never saw a rash in the Chitral cases, but it must be remembered that most of his cases were in Indians and consequently the rash would have to be very definite before one could be certain of its existence.

Wimberley saw a rash in about 8 per cent. of his cases.

Sarrhailhe and Delille both lay stress on the fact that the rash is present in certain outbreaks and absent in others, and there is little doubt that they are describing the fever ordinarily known as "sand-fly fever."

Most of the other accounts mention the occurrence of the rash in a few cases, but under the most favourable circumstances the rash of dengue is variable and evanescent and is often overlooked; further, it occurs usually with terminal rise, and it seems reasonable to expect that in the cases in which the terminal rise is slight or absent the rash may be correspondingly trivial or absent. If the rash is to be made the point on which the diagnosis rests, what will be said of the outbreaks in which the rash is present in 7 per cent. or even in 50 per cent. of the cases? Are only those cases in which a rash occurs to be considered as cases of dengue, while the remainder are cases of sand-fly fever? The truth seems to be that the rash of dengue is like the rash of typhoid fever in that stress can be laid on it when it is present, while its absence is of little value as evidence, for or against the existence of the disease.

If the duration of the fever and the rash are not reliable points on which to base a differential diagnosis nothing more need be said, for these

are the only points on which present-day writers rely for a distinction between the two fevers.

But my object is not to succeed in a controversy, but to ask for a serious consideration of the problem so that it is necessary to deal not only with the difficulties that others have raised but with any others that may occur to myself.

One such difficulty is connected with the insect-carrier of the disease. The insects that have been held responsible for carrying dengue have been *Culex* and *Stegomyia* mosquitoes; no one has seriously suggested the *Phlebotomus* as a possible carrier. Then, in connection with sand-fly fever, there is no evidence that there is any other carrier than the *Phlebotomus*, though some writers suggest a mosquito as the probable carrier. If it should be proved clearly that there are certain epidemics in which the mosquito is the sole carrier and that there are other epidemics in which the *Phlebotomus* is the sole carrier, it would be probable, though not certain, that we are dealing with two distinct diseases. Again, if it could be clearly proved that in some epidemics the one insect alone is *capable* of conveying the disease while in others the other insect alone is capable, the question would be settled almost as completely as if the virus had been isolated in each case and shown to be different.

More work is needed on the experimental conveyance of the infection of this disease from man to man by various insects. Apart from a few carefully conducted experiments, our knowledge is largely conjectural and in very few cases have proper controls been employed. What is specially wanted is a series of experiments in which both the *Phlebotomus* and the mosquito should be allowed to bite an infected person simultaneously, and then allowed to bite immune persons.

Another point of equal importance is to determine definitely whether one type of fever immunises against the other. If it does, there is a strong case for the unity of the two fevers; while, if it is found that no such immunity is produced, there is an equally strong case for the differentiation of the diseases. As has been pointed out already, such evidence as exists points to the short fever immunising against the longer and *vice versa*.

CONCLUSION.

Though at first sight it almost appears obvious that dengue and sand-fly fevers are quite distinct from each other, the evidence when analysed is by no means convincing. Until some reliable point of distinction between them is discovered, it is better to stick to the old term "dengue."

The terms three-day and seven-day may be added, if desired, to show the duration of the disease in any particular case, but they are not suitable as titles for the disease.

Even if the balance of opinion should be in favour of regarding sand-fly fever as being distinct from dengue, there can be no justification for giving a long separate account of the two diseases. The utmost that can possibly be said by way of description of sand-fly fever being something like this: "It is a disease which is either one of the modifications of dengue or is closely related to dengue. Those who consider it to be different from dengue say that it can be distinguished by the absence of a rash and by the absence of a secondary rise of temperature, though it must be admitted that in many outbreaks of undoubted dengue numbers of the cases show neither rash nor secondary fever. There is also a possibility that dengue is conveyed by a mosquito, while sand-fly fever is conveyed by a *Phlebotomus*."

If this is the utmost that can be argued by the "dualists" and if they will confine themselves to the above line of action, I have no quarrel with them. It is when they complicate the text-books and confuse students and practitioners by long and unnecessary descriptions that it is essential to issue a definite challenge to them.

A CIVIL SURGEON AT HEADQUARTERS IN UPPER BURMA.

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IN a recent number of the *Indian Medical Gazette*, I tried to give some idea of the work of a Civil Surgeon "on tour" in Upper Burma, and the following is an attempt to portray his work at headquarters.

There are few posts in any profession where the work is so varied as that of a Civil Surgeon. He may specialize in one particular direction, but his daily work is as heterogeneous as the coloring of a "dazzle-painted" ship. This certainly adds to the interest of life, for there is something wrong with a man if he cannot find a hobby in some of the numerous duties of his daily round.

None of these, it is true, are likely to bring him either wealth or fame, but with the increased pay Mr. Montagu has promised us, he will be able to exist quite comfortably.

There are, of course, occasions when he will find himself in cordial agreement with that philosopher who defined life as "Just one d—d thing after another," but a sure remedy for this frame of mind is a tour in the jungle.

The day usually begins by a visit to the jail, with its population varying from one to eight hundred prisoners. The work is of a very routine character and the *Jail Manual* provides for almost every possibility. Some people

find it interesting, but I cannot claim to be one of them, nor can I enthuse over discharging the criminal, a fatter, heavier man than he was on admission. With all due respect to the department, I think this aspect of jail administration has been rather overdone. After all, the criminal owes a debt to the State, and the latter should see that he pays it, even if he does lose a few pounds weight in the process.

On the whole, prisoners are well behaved and give little trouble, most of their "crimes" being petty offences against jail discipline, as for instance when convict No. 555 is brought up before the Superintendent for laughing, and convict officer No. 303 for allowing convict No. 555 to laugh.

There are, of course, always a few rebels, born criminals, who have spent a large part of their lives in jail, but, generally speaking, prisoners accept their fate with placid indifference, and fall into the jail routine without a struggle.

The most interesting part of jail management is the utilization of labour. The garden employs a number of prisoners, but its possibilities have never been properly exploited. It might be used for experimental cultivation, under very favourable circumstances, but Superintendents have not the necessary expert knowledge, and in any case are always liable to transfer, so they rarely get beyond the growing of ordinary English and country vegetables. I once built a small septic tank in a jail garden, and experimented with it for two years, with complete unsucccess, but this can hardly be described as experimental cultivation.

The chief jail industry in this province is carpentry, but there are many subsidiary ones, such as blacksmithy, weaving, cane and bamboo work, rope-making, etc. In addition, the jail is the great repairing shop of the station, and no chief jailer worth his salt will ever admit that any job is beyond the powers of his workshop, and he can usually make his claim good. Here again, a great deal more use might be made of jail workshops, in investigating the industrial possibilities of the various woods with which Burma abounds. In the past, teak has been used for furniture, to the almost complete exclusion of other varieties. Perhaps now that it has become so costly, the humbler woods may get their chance.

Next comes the hospital. A few of these buildings are modern and up to date, but the majority of them show clearly their origin from small beginnings, and follow no known principle of architecture, being in fact a mosaic of additions and extensions clustering round the original building. Wood is universal in the older parts, but of late years brick has been coming more and more into use, owing to the rapidly increasing cost of teak.

One of the chief drawbacks of a Civil Hospital in the past was the lack of trustworthy intelligent supervision over the patients. The Sub-Assistant Surgeon, one of the hardest worked men in the province, had too many other duties to exercise more than a nominal control. The ward servants, ignorant and careless, receiving only a cooly's wage, were quite useless. Consequently the patients and their friends did very much as they pleased.

One morning I operated on a cataract and about an hour afterwards had occasion to visit the ward. I found the patient sitting up in bed, while a pal of his, a disreputable cooly, had taken off the bandage, and with two dirty fingers was pulling the eyelids apart, while he described to the patient what the eye looked like. That cooly left the ward hurriedly, somewhat after the manner of an empty kerosine oil tin caught in a "Dust devil."

On another occasion I operated on a badly depressed comminuted fracture of the skull. The comminution was so complete and widespread that the resulting hole in the skull was about the size of a wrist-watch. The same afternoon, while driving through the town, I met a squad of three policemen marching a prisoner with a bandaged head in the direction of the lock-up. Something familiar about the prisoner's face made me stop and investigate. It was my operation case of the morning, arrested for causing a disturbance at a *pué* the night before. We will draw a veil, or, perhaps better, close our ears to what followed. Nowadays things are better, though still leaving much to be desired, and incidents like the above not likely to occur.

The Burman has of late been taking up hospital work more than formerly. We have now a very excellent class of men called ward assistants, who have had a year's training in nursing, ward duties, dressing minor wounds, etc. They are in fact very much like what the Hospital Assistant was when he first started.

Burmese and Karen nurses are also coming to the front, and few hospitals of any size are without one or more. Their training still leaves something to be desired, but everything must have a beginning.

The menial staff is still largely Indian, but I believe in time these will be gradually replaced by Burmans. The ordinary Indian menial met with in this province is not generally a very favourable specimen of his race, and when the Burman has acquired a little more discipline and sense of responsibility, his substitution for the Indian will be a gain to all concerned. He has one priceless advantage, in being free from the trammels of caste, and is willing to turn his hand to anything. After living in Burma for some time, one is apt to get impatient with these

whims of caste and custom, especially as it is difficult to avoid the suspicion that they are sometimes used for the purpose of avoiding unwelcome work, as the following instance shows.—

At a station on the Irawaddy, the well water gave out during the hot weather, and supplies were obtained from the river, across two miles of deep sand. The water was carried in casks on bullock-carts, and the hospital *bhisti* had to go down to the river, fill the casks, and after arrival distribute the water. It was obviously impossible for one man to do all this, so four *dooly*-bearers attached to the hospital, and who had little or no work of their own at that particular time, were told off to go down to the river in rotation and fill the casks. But these men had other views on the subject, and, forming themselves into a deputation, intimated that they were engaged to carry a *dooly*, and it was contrary to all the laws of God and man that they should work as *bhistis*, and they declined to do it. The men were perfectly respectful, but their faces wore that mingled look of injured virtue and smug complacency which the Indian of the menial class assumes when he thinks he has got the Sahib "on toast." And for a moment the Sahib felt rather as if he were in that unhappy position; but a way of escape presented itself. Certainly they were engaged to carry a *dooly* and not to fill water-casks, but carrying a *dooly* required constant practice. In future, therefore, every morning and evening, they must carry the *dooly*, with the *bhisti* in it, down to the river, and when he had filled the casks carry him back again. Thus their bodies would be kept strong and their shoulders hard. This decision was received in silence and without enthusiasm.

Next day they valiantly trudged through the sand, morning and evening, carrying the *dooly* with the *bhisti* in it; but the following morning an humble and tearful deputation again waited on the Sahib. He was their father and mother, their one desire was to carry out his wishes, and filling water-casks a work in which they took particular delight. Would the Sahib be graciously pleased to order them to do it? After long and careful consideration, the Sahib was so pleased, and harmony again reigned, but he knew and they knew what convicted humbugs they were.

The Burman, especially the agriculturalist, is a shy bird and does not come to hospital, until several of his own *sayas* (doctors) have tried their hands and failed. Consequently when he does arrive it is usually in an advanced and frequently hopeless stage of the disease. Cancer is fairly common, but one rarely sees it until all hope of operative interference is long past. It depresses and saddens one to be obliged so often to say, "I can do nothing, it is too late." The amount of pain, misery and discomfort these

people will endure, often for years, rather than be operated on, is extraordinary. One such case in particular sticks in my memory, on account of its tragic ending. A woman, of about 50, came to hospital, with a tumour on the neck, almost as large as her head. She had had it for 30 years but really could not put up with it any longer. Its removal was a comparatively simple matter, and when the wound was healed, she was given a looking-glass to see the results. Her delight knew no bounds. "Why, I'm quite good-looking now," she exclaimed. A delightfully cheery soul, she kept the whole ward in laughter with her quaint sayings, informing her hearers that now she was so handsome no one in the village would recognize her and half the men would want to marry her.

Finally she left the hospital, telling us she was going to stay a few days with some friends in the town, before returning home. Two days later she was brought back again to hospital, and this time—dying of cholera.

So she never got an opportunity of showing the people of her village what a handsome woman she had become.

Head injuries are amongst the commonest causes requiring operation, and they are usually brought to hospital by the Police. It does not require much to make a Burman "see red," and then he uses his *dah* with great vigour on his opponent's head, usually with very serious results, in the shape of extensively comminuted fractures of the skull. The Burman head, however, has uncommon recuperative powers, illustrating perhaps the survival of the fittest, through long generations of *dah*-using, head-whacking ancestors.

The bone may be in minute fragments with bits embedded in the brain, and a teaspoonful or two of the latter lost, but if you only get the case before septic meningitis has set in, you can almost certainly count on a rapid and complete cure. If the case goes wrong, it is because the fracture has extended to the base, and post-mortem examination verifies this.

The Burman is a sociable individual, loneliness is abhorrent to him. When sick, he likes to be surrounded by his relatives, friends and neighbours. This is one reason why he dislikes the hospital. One has to draw the line at 10 or 20 people, of both sexes and all ages, camping round his bed, and discussing in perfectly audible tones, the patient's chances of dying, and the funeral arrangements in case he does so. Nor does he believe in the proverb, that too many cooks spoil the broth, at all events as regards his health. Rather does he incline to the belief, that several forms of treatment, prescribed by different doctors, and carried out simultaneously, afford the best chance of hitting of a cure. He has also an abounding

faith in massage, and it is somewhat disconcerting to find a case of appendicitis, or enteric fever, subjected to a vigorous course of this treatment.

There is a good deal of medico-legal work at headquarters, Sherlock Holmes would revel in it. Death by various kinds of violence forms the bulk of these cases, and it is often a hopeless task to reconcile the story told by the prosecution and the story written on the victim.

In one case every particle of evidence including that of the dead man himself, for he lived long enough to make a statement, went to show that he had been shot while advancing towards the man who held the gun, yet the bullet had entered behind the right shoulder and passed downwards through the lungs into the abdominal cavity, where it remained. There was no exit wound. I have often wondered what really happened.

On another occasion the body of a girl was found in a tank near the village where she lived.

On the village side the tank was contained by a high bund and the water comparatively deep, while on the opposite shore the ground sloped very gradually down to the water's edge, with several yards of mud separating the two. The body was close to the bund while on the opposite shore, a single track was found leading through the mud into the water. The theory of her relatives and the Police (perfectly reasonable and in accordance with the available evidence) was, that the girl wishing to return to the village, and in order to save herself a walk of perhaps half a mile round the end of the tank, had tried to wade across it, but got out of her depth and was drowned.

On post-mortem examination, the lungs had not the appearance characteristic of drowning. Moreover the girl had received a severe blow on the side of the head, causing detachment of the meninges and hæmorrhage, but as the skin was unbroken this had been overlooked. Furthermore she had been violated after a severe struggle. In this case it was not difficult to piece together the tragedy.

Fearing no doubt that the girl's cries might attract attention, the ravisher either hit her on the head, or banged it against the hard ground, probably with more force than he intended. Then, finding she was either dead or unconscious, he had carried the body into the tank, thus accounting for the single track, and left it close to the bund where the water was deep, so as to create the impression that death was due to drowning. I regret to say this scoundrel was never detected, and one can only hope, that though he escaped human retribution, the avenging Furies marked him for their own.

Very occasionally the comic element creeps in, as when one villager having a grudge against

another, accused him of murdering a third villager, who had mysteriously disappeared some time before. The accuser pointed out the place where the body was buried, and a skeleton was dug up, which was forwarded to me for report. It was the skeleton of a calf minus the head. To complete this joker's discomfiture, the missing man turned up, and stoutly denied that he had ever been murdered. Seeing the game was up, number one confessed that he had buried the skeleton of the calf himself, and left out the head for fear it would give the show away. He quite forgot about the tail.

An important and engrossing part of a Civil Surgeon's work, is that of Health Officer to the Municipality, and this includes Executive as well as Advisory duties, for the lesson is soon learned, that if he does not himself translate the advice into action—no one else will.

Sanitary by-laws are looked upon as so much eyewash, which no self-respecting Municipality should be without, but any attempt to put them into practice is looked upon as a gross violation of the rights of the individual. The Burman will cheerfully give his consent to any sanitary by-law on the implied understanding that it will never be enforced against himself. This disregard of public rights when they conflict with private interests, is not unknown in England, but there is always enough leaven of public spirit to maintain progress. Here the leaven is non-existent, and the enforcement of by-laws for the benefit of the public at large is a never-ending struggle against inertia, evasion, and passive resistance.

As long, for instance, as a man can deposit his house refuse, solid and liquid, outside his own enclosure, he cares not what insanitary conditions are produced by so doing. I must say the worst offenders of all are amongst well-to-do Indians. They build *pucca* houses with projecting pipes in the side walls for the discharge of sullage water, without the slightest regard to where the filth falls, and think it a grievance when compelled to connect these pipes with a municipal drain.

The registration of vital statistics, vaccination, aerated water factories, slaughter-houses, bazaars, drainage, day and night conservancy, all require continual vigilance to keep the subordinate staff up to the mark.

Then there are the milk-sellers—those “dood-wallahs,” Indians all, and without exception the dirtiest, most conscienceless set of rascals that ever preyed on their fellow-men. Their ill-fed, neglected cattle give poor enough milk in all conscience, but the milk-seller is not content unless he can add at least 50 per cent. of water, and prefers dirty water to clean. The conditions under which these cattle are kept, contravene every known sanitary principle, and the only possible

way to effect any improvement is for the municipality to secure one or more sites on which all milch cattle should be housed. These sites properly laid out, drained and subject to frequent inspection, could be kept in a reasonably sanitary state. As long as the milk-sellers keep their cattle scattered all over the town and its environments, no improvement is possible.

I understand that here and there Burmans are beginning to take up dairying, realizing that the Indian has, up to date, been monopolizing a very profitable trade, and I hope this is true, for the Burman at all events feeds his animals properly.

Epidemics do not, as a rule, cause more than a ripple on the surface of Burmese life. The people are so accustomed to outbreaks that they meet them with an apathetic acquiescence which constitutes the chief bar to their eradication. The recent influenza epidemic is a case in point.

An exception must however be made in the case of plague, when it first reached this province.

Probably we ourselves, with our propaganda, disinfection, rat-killing and other paraphernalia, had something to do with this. Possibly the high mortality (at that time about 95 per cent.) was also a factor, but I believe the chief reason was the slow mysterious progress of the disease, which pounced now here, now there, like the witch-doctor “smelling out” his victims in one of Ryder Haggard's stories. “Small-pox we know, and cholera we know, but what is this?” asked the Burman.

The earliest victim was, as is so frequently the case, a bazaar seller, an elderly woman, without discoverable friends or relatives, so her burial was undertaken by the municipality. Slowly the disease spread through the town, and with it a gradually increasing dread, which aroused the people from their incredulity and apathy, but unfortunately only drove them into courses which were always futile and sometimes ludicrous. A deputation, headed by a somewhat truculent Burman elder, waited on the president, and solemnly informed him that the plague was due to the old woman, mentioned as having been the first victim, being buried with her head pointing in the wrong direction. They asked permission to dig up the body, in order to rectify this grave error, and were quite confident that by so doing, the plague would be stopped. Permission was accorded and the old lady's body duly re-planted in the correct position.

Surely the gods must have chortled to themselves at this exhibition of human folly, for they certainly showed a grim and impish sense of humour in selecting for their very next victim the daughter of the Burman who headed the deputation.

As the disease gained a firmer grip of the town, many of the inhabitants fled to the

surrounding villages carrying the infection with them. Trade came to a standstill and gloom settled on the deserted streets. At night numerous fires, casting a dull lurid glow, flickered in front of the houses, in the vain hope of preventing the entrance of the pestilence that stalketh in darkness. Bands of elderly men paraded the streets in slow and solemn procession, with beat of gong and chanting of prayers.

Yet nothing could exceed the obstinacy with which the people refused their co-operation, or the ingenuity with which they evaded well-meant orders, and in the light of more recent knowledge it must be confessed their prejudices had more justification than appeared at the time.

Disinfection was in those days one of the chief methods relied on to combat plague, but most of us recognized before long that attempts to enforce it did more harm than good. The dislike was so intense that it soon became the custom, before reporting a case, to strip the house of all moveables, and leave nothing but bare walls and floors to be disinfected. The various articles removed were distributed amongst friends and neighbours, and in this way no doubt infection was spread.

Rat-destruction has been lauded as a plague preventive, and no doubt it is in theory, but of all the dreams dreamt by sanitarians, this one of hoping to prevent plague in a Buddhist community by killing rats is surely the most fantastic and impractical. No doubt it is possible, at great expense in a limited area, and for just as long as the effort continues, to prevent plague by this means (though I know of no instance where it has actually been done), but taking into account the resentment engendered, I doubt if the game is worth the candle.

It is a trite and true saying that no measure of prevention can succeed without the co-operation of the people, but what co-operation can you expect from people who open traps to let the rats escape, or carefully sweep up and destroy poisoned baits?

The object to be aimed at is not to kill rats, but to prevent them living in close association with man, and this can only be slowly and laboriously achieved by permanent improvements in housing conditions and general sanitation, together with the gradual realization by the people that it is better and safer to keep their houses free from rats. Buddhist prejudices apart, I am very sceptical about rat-killing as a plague preventive. I find it impossible to imagine any practical degree of rat-destruction, which would appreciably reduce the rat population over any considerable area. The effort would have to be continuous; relax it for even a short period, and the rats would swarm in from all sides until their food limit was reached. Moreover, no discrimination can be

exercised: immune rats are killed as well as non-immunes, and the places of the former quickly taken by young non-immunes, with the final result that the new rat population as a whole is more susceptible to plague than the old one.

Of all the various methods advocated to stamp out plague, evacuation is the only one that has stood the test of time and experience, and has the supreme recommendation that it conflicts with no popular prejudice. Inoculation may be left out of account as a preventive, until the immunity conferred by it approaches, in length of time, that conferred by vaccination.

As ex-officio vice-president of the municipality, many duties of a non-professional character often fall to the lot of the Civil Surgeon, and some of these are distinctly amusing.

One morning a highly indignant Indian lamplighter came to the municipal office and retailed at great length the grievous wrongs he had suffered in the discharge of his duties.

The Burman small boy is, like other small boys, only more so, and one of them grasped the fact that a lamplighter at the top of a ladder was in an extremely bad tactical position, either for defence or for counter-attack. Collecting a band of kindred spirits, all armed with catapults, he opened rapid independent fire on that part of the lamplighter's anatomy where the back joins the legs. The amazed and indignant lamplighter came tumbling down the ladder vowing vengeance, only to find that his assailants had vanished. Every time he got to the top of the ladder, the same thing happened, and to cope with these Parthian tactics was beyond him. Loudly he clamoured for justice, expatiated on the agony he had suffered, and the exact position of his injuries.

Obviously such conduct could not be tolerated and a second man was sent with him the following evening to mount guard while he mounted the ladder. But the small boy was not thus easily defeated. A feigned attack and retreat drew the guard away in futile pursuit and left the unfortunate lamplighter undefended. Next morning two much injured men told the tale anew.

This really had to be put a stop to—so the Ward Headman was sent for and told that until he could guarantee immunity for the lamplighter, no lamps would be lit in his ward. It seemed rather a mean way of stopping such splendid sport, but the sanctity of the municipal employé had to be vindicated.

One morning a Burman came to the office and complained that an Indian shopkeeper had filled up the lane behind his house with empty boxes and completely obstructed the traffic, to the

great inconvenience of himself and his neighbours. The boxes were ordered to be removed.

A couple of days afterwards the Indian arrived on the scene, and complained that as soon as he had removed his boxes, the Burman had filled up the lane with bamboos and the obstruction was worse than ever.

It is just like dealing with a lot of impish children.

It has been a busy morning and I think it is now high time for the Civil Surgeon to go home to breakfast, so we will bid him farewell.

SCHISTOSOMIASIS IN INDIA.

By R. B. SEYMOUR SEWELL, F.A.S.B.,

CAPTAIN, I.M.S.

In a paper recently published in the *Indian Medical Gazette* (April, 1919), Mr. F. Milton has put forward the view that human schistosomiasis is in all probability endemic in India and yet has hitherto entirely escaped the notice of medical men practising in this country. He has thrown down the gauntlet and has challenged us to bestir ourselves and to demonstrate and recognise the existence of this disease; to quote his own words: "*It is to be sincerely hoped that a great Medical Service*" [I presume that he is here referring to the Indian Medical Service!] "*will not endanger its reputation through leaving some outsider to discover that Schistosomiasis is among the common diseases of man in India.*" (The italics are mine.—R.B.S.S.)

The arguments that Milton brings forward in support of his view are briefly as follows:—

(i) India is situated within the zone in which schistosoma is known to flourish.

(ii) The conditions of race, occupation, and mode of life of the population are favourable to the spread of a parasitic disease such as schistosomiasis.

(iii) The necessary intermediate mollusc hosts are plentiful and widely distributed.

One cannot read Milton's paper without coming to the conclusion that his whole argument, in favour of human schistosomiasis being widespread throughout India, is based entirely on *a priori* reasoning without a particle of evidence to support it. He has dealt with the clinical and pathological aspects of the disease in other regions of the globe, but he has made no reference to its biological aspect, further than enumerating a list of species and hosts, nor has he given any summary of the life-history of the parasite, although this is now fairly well established by the researches of Katsurada in Japan, Leiper in Egypt, and others.

The parasitic schistosoma in its adult sexual stage lives in the abdominal veins, either the portal, mesenteric, rectal, or vesical veins, of

a warm-blooded animal, either man or some lower form: eggs are deposited in the tissues and escape out of the body in the various excreta by means of natural channels, such as the urethra or the rectum and anus. These eggs, if they are fortunate enough, on escaping from the body, to be deposited in or near water, hatch, and a ciliated larva, the "miracidium," makes its appearance; this larva then enters the body and finally comes to rest in the liver of a fresh-water snail. Not every genus, however, of fresh-water snail appears to be capable of harbouring the parasite; each species of schistosoma seems to have its own particular genus, in which it develops under normal conditions. Having obtained entry into a suitable mollusc host, the "miracidium" encysts and from the sporocyst there arise numerous 'cercariæ,' which leave the snail and pass out again into the water, and in their turn make their way into the body of a warm-blooded animal *viâ* the skin and subcutaneous veins, or possibly occasionally *viâ* the mouth, and on reaching the abdominal veins they undergo further development and become the sexually-mature adult worms.

From the above life-history it is evident that the study of schistosomiasis is not merely a medical or veterinary subject but is in great part a zoological one. *Schistosoma hæmatobium* (Bilharz.) has undoubtedly been introduced on many occasions in the past into India under conditions apparently favourable to its propagation, and occasionally the parasite may possibly have managed to complete its life-cycle in this country, thereby causing a fresh infection in man, though the evidence regarding such rare cases is not altogether above suspicion; but in any case it seems abundantly clear that this parasite has not and apparently cannot become endemic. The reason why this human-infecting parasite fails to secure a footing in India, if indeed this be a fact, may be found to depend on some factor inimical to its growth and development in its mollusc host, and not to be due to any inability to develop in man, for if the life-cycle be broken at any point, further development of the parasite becomes impossible. Milton has given a list of all the present known species of *Schistosoma* and has added a list of their "known" mollusc hosts, but he has unfortunately paid no attention to synonymy: for example, *Schistosoma magnum* (Cobbold) is generally regarded as being synonymous with *Sch. hæmatobium* (Bilharz); *Schistosoma reflexum* is, I understand, merely a term used in teratology: again *Bullinus alexandrina* is merely a synonym of *B. dybowskyi*; and finally the correct name of the mollusc host of *Schistosoma japonicum* is *Hypsobia nosophora*, the name *Katayama nosophora* being a synonym, while *Blandfordia nosophora* is an incorrect diagnosis. Milton has,

moreover, included in his list of mollusc hosts, the names of certain species regarding which the evidence is not convincing—I refer to the inclusion of two species of *Planorbis*, viz., *P. mareoticus* and *P. pfeifferi*, as being “known” hosts of *Schistosoma haematobium*: *Planorbis mareoticus* is the host for an eyed-form of cercaria, probably belonging to a closely allied group of parasites, *Bilharziella*, but I know of no evidence connecting it with *Sch. haematobium*; and *P. pfeifferi*, though acting as host to a “tadpole” cercaria [the *Schistosoma* cercaria is of the furcocercous type] has given negative results in cases where attempts have been made to inject it with schistosome miracidia.

It would appear that each species of Schistosome has an affinity in any particular region for a particular genus of mollusc and probably for a limited number of species in each genus. *Schistosoma haematobium* infects snails of the genus *Bullinus* with its sub-genus *Physopsis*, and in Egypt usually occurs in *Bullinus contortus* and *B. dybowskii*, though occasionally it may infect *B. innesi*; while in South Africa it infects *Physopsis africana*: *Sch. mansoni* normally infects *Planorbis boissyi*, and possibly *P. pfeifferi* in Egypt, *P. olivaceus* in Brazil and *P. guadelupensis* in Venezuela—as regards *P. ferrugineus* and *tenographilus* I understand that the infection experiments were only partially successful; and finally *Sch. japonicum* in Japan seems to infect only *Hypsobia nosophora*.

This brings us to the very important question of the necessary intermediate hosts in India: here the genus *Bullinus* is almost, if not entirely, non-existent, its sole doubtful representatives being the species *Physa coromandelica*, and *P. acuta* that was described some fifty years ago but has not been seen since; numerous species of *Planorbis* occur, but the only one that is widely distributed is *Planorbis exustus*; and the genus *Hypsobia* is, so far as we know at present, entirely unrepresented. Moreover, examination of the probable mollusc hosts in India has shown that they are already so heavily infected with Trematode parasites that the chances of yet another species being able to compete successfully appear to be small.

In India up to the present time four species of Schistosomes have been described, occurring in cattle, horses, sheep, etc., namely, *Sch. bovis*, *Sch. bomfordi*, *Sch. indicum* and *spindalis* and this latter species has recently been shown probably to pass through its asexual stage in *Planorbis exustus*. No trace of any endemic man-infecting Schistosome has as yet been recorded, and with four known species of animal-infecting parasites already in existence and thriving in this country, it is surely quite unnecessary for us to presuppose, as Milton

suggests, the existence of an entirely hypothetical fourth human-infecting form in order to account for the absence of the other three—to wit, *Schistosoma haematobium*, *mansoni*, and *japonicum*.

If schistosomiasis does occur in man in India, the parasite will almost certainly be found to make the veins of the portal system its normal habitat, and will, in the vast majority of cases, be associated with an excessive eosinophilia in the blood, but the only reliable guide to the diagnosis of this disease in the living subject is the actual finding of the eggs of the parasite in one or other of the bodily excreta; up to the present time such finding has only been recorded in this country in extremely rare cases, if we exclude those who have imported the disease from other regions, and though in recent years the search for the hook-worm has led to the systematic and thorough examination of the faeces of thousands, not a single case of rectal schistosomiasis in man has, so far as I know, been reported.

“We preach that we do know and testify that we have seen” and up to the present time no evidence has been brought forward that in any way indicates that schistosomiasis is wide spread in India; such evidence as we have is entirely of the negative kind.

I agree with Milton that we have in this country many different morbid conditions, which are grouped together and which in the present state of our knowledge we are unable to differentiate, but I cannot subscribe to his dictum—“It is almost certain that India will be found to harbour a new species of schistosoma, with a distinctive pathological entity depending on it.” Extensive research on both medical and zoological lines is required before we can hope to say definitely that endemic human schistosomiasis does not exist in India or that it cannot spread if introduced on a large scale from outside and the reputation of a great medical service would indeed be seriously endangered if we, in the present state of our knowledge, were to adopt a definite and final opinion one way or the other.

All that we can do is to follow the Asquithian dictum “Wait and see,” and for the moment regard the case against the schistosoma as “Not Proven.”

REMARKS ON THE INFLUENCE OF ABDOMINAL LESIONS ON THE RESPIRATORY SYSTEM.

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Station Hospital, Ambala.

My attention was first drawn to this subject while investigating the changes in the respiratory movements in cases of abscess of the liver.

Since then I have observed the effects produced on the respiratory organs by such lesions as acute appendicitis, renal colic due to calculus, abdominal incisions for appendicitis or hernia, and other conditions involving trauma of the abdominal wall.

In all these cases a definite series of changes can be observed in the respiratory system, mechanical in nature and reflexly produced and remaining mechanical unless complicated by intra-thoracic sepsis such as, for example, the spread of peritoneal infection into the pleural cavity, when we have other factors introduced which complicate the ordinary course of events. In cases not complicated by intra-thoracic septic changes, we have to take into consideration two main factors, the first being the pain due to the lesion and the second the intra-abdominal pressure.

Let us consider the effects of the pain first:

In a case of acute appendicitis, for example, we have, as a result of the pain, an increase in the rigidity or tonus of the right rectus muscle, and to a certain extent of the oblique and transversalis muscles. This is reflex and protective, and produces, by immobilising the affected and painful area, a diminution in the pain. As soon as the rigidity is sufficiently pronounced for detection by palpation, a careful examination of the chest will demonstrate

(1) a diminution in the movements of the right chest wall;

(2) a diminution in the intensity of the breath sounds over the right base;

(3) a diminution in the range of movement of the right half of the diaphragm; and,

(4) possibly a slight elevation of the right half of the diaphragm.

As the pain increases all the above changes become more and more marked, and in a few days slight dulness, accompanied by a few moist sounds, may be made out over the right base. In the absence of definite sepsis in the pleural cavity the case does not progress beyond this stage.

The removal of the appendix does not immediately do away with the signs in the right chest; in fact, the pain caused by the incision together with the effects of the anæsthetic may actually aggravate the condition, and as long as the incision remains painful, the respiratory organs will not be restored to the normal.

We have all seen cases where a healthy appendix has been removed when the patient really had a patch of pneumonia, which had been overlooked, in the right lung. This is a question of referred pain misleading the surgeon.

In this article we are dealing with the reverse process, and I wish to point out that thoracic signs of the type described above, following on or discovered after an operation, must not lead the

surgeon to assume that he has made a wrong diagnosis and that the appendix was not the cause of the trouble, when only slight changes can be detected in the organ after its removal. Naturally, the increase in the thoracic signs for a day or two after the operation still further tends to confirm his suspicions concerning the correctness of the diagnosis.

The same sequence of intra-thoracic changes follows in the other abdominal conditions I have mentioned above, and in fact in any condition which gives rise to unilateral pain, provided the pain is sufficiently intense to cause reflex rigidity of the abdominal muscles on that side, and so mechanically restrict the movements of the chest wall.

Let us next take the second factor, *viz.*, the intra-abdominal pressure:

This is well illustrated in cases of abscess in the right lobe of the liver.

We have in the early stages a diffuse enlargement of the liver accompanied by a slight elevation and a diminution in the range of movement of the right half of the diaphragm. There are also changes in the movements of the right chest wall and in the lung, of the type described above.

As the abscess develops and enlarges, the elevation of the right half of the diaphragm increases and its range of respiratory movements diminishes until it ultimately comes to a standstill at about the level of the third rib or space.

At this stage the right lung shows slight dulness and a few moist sounds over the base and diminished breath sounds over practically the whole lung.

To a large extent the above changes are produced by the actual size of the liver, but the rigidity of the abdominal muscles, reflexly caused by the pain, is also a contributory cause.

The changes in the position and movements of the diaphragm can be easily followed by simply screening the case, and in fact an X-ray examination is of the utmost importance in determining the size and position of the liver abscess, apart from the information gained by observing the behaviour of the diaphragm.

The elevation of the diaphragm cannot be entirely due to the mechanical increase of pressure below, because, if that were so, then the diaphragm ought to get more and more tense as the size of the liver increases. But this is not the case. In fact the right half of the diaphragm is relaxed. So there must be a reflex inhibition of the tonus of this half, and this accounts for the fact that the elevation terminates abruptly near the middle line, the left half retaining practically its normal level, even when the right is raised 4 to 5 inches.

This relaxation also explains the unilateral elevation and diminution in the range of movement in such conditions as appendicitis, incisions

and other unilateral abdominal lesions where the increase of pressure is very slight.

Another phenomenon, which I could not account for in the first few cases of liver abscess I operated on, becomes easier to understand in view of the existence of the above changes.

It was observed that in large liver abscesses operated on transthoracically, after resecting a piece of rib and opening the pleural cavity, no inrush of air took place in those cases where no adhesions existed between the parietal and diaphragmatic layers. This could only be explained by assuming that the lung does not collapse when air is admitted into the pleural cavity, or else, that the lung had already collapsed before the operation.

As a matter of fact, we know that immobilisation of one side of the chest for a few days tends to produce gradual collapse of the lung, and in fact, I found the lung well retracted beyond the reach of my finger in all cases of large liver abscesses of some days' duration, and the resection of the rib and the opening of the pleural cavity could produce little or no immediate effect on the already retracted and collapsed lung.

Moreover the recovery of the lung in these cases, although the pleural cavity is completely shut off by adhesions in the first day or two after the operation, takes several weeks before it is complete, whereas the healthy lung accidentally allowed to collapse in a case in which a piece of rib was used for grafting purposes, took only 48 hours before expanding to the full extent of the pleural cavity. This is naturally to be expected, as a lung which slowly collapses adapts itself to its diminishing size and undergoes definite structural changes, whereas a sudden collapse of a healthy lung leaves the organ in the best condition for a rapid resumption of its original size and shape, as soon as the pleural cavity is rendered air-tight.

So we see that the pain accompanying a unilateral abdominal lesion reflexly produces an increased tonus in the abdominal muscles of that side and this mechanically restricts the respiratory movements of the chest wall. There is also a restriction of the movements of the corresponding half of the diaphragm and a diminution in its tonus allowing it to be easily elevated if any increase in the intra-abdominal pressure should co-exist. In fact, the increased pressure produced by the increased rigidity of the abdominal muscles is sufficient to produce detectable elevation, in a case of appendicitis for example.

This unilateral diminution in the activity of the chest wall and diaphragm, if progressive, causes changes in the lung, leading ultimately to complete collapse, if the thoracic and diaphragmatic movements are brought to a standstill.

Physiologically the anterior and lateral abdominal muscles are antagonistic in their action to the diaphragm, and we know that an increase in the tonus of a particular group of muscles produces a corresponding inhibition of the tonus of the antagonistic group.

The behaviour of the diaphragm in the conditions I have described above is only what, after all, one has a right to expect.

In bilateral abdominal conditions, such as ascites, uterine fibroids, cystic swellings, etc., two main facts have to be kept in mind in estimating the effects they are likely to produce on the respiratory organs, *viz.*—

(1) that most of these bilateral conditions are not accompanied by any marked degree of pain, and so the influence of a reflexly increased tonus in the abdominal muscles does not come into operation;

(2) that bilateral changes in the lungs of the type described above prove fatal long before complete collapse of both lungs has occurred.

In conclusion, I wish to thank Lieutenant-Colonel Brian Watts, D.S.O., for permission to publish this article.

A Mirror of Hospital Practice.

CALCULI OF THE PROSTATE.

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I HERE report three cases of calculi of the prostate: one in which two calculi were present; another from which twelve faceted calculi were removed, and a third with forty-six seedling calculi.

Prostatic calculi usually occur in middle life and old age. In the three cases that have so far come under my notice, the largest stones occurred in youths of nineteen and twenty, and small calculi in a man of thirty-five.

As to the origin of prostatic calculi we know that, though lodged in the region of the prostate, they may have three modes of origin and formation:—

1. They may be formed in the *substance of the prostate gland* itself. They have then as their basis the corpora amylacea with varying amounts of calcium phosphate and carbonate deposited round them, giving rise to stones varying in size from grains of sand to large calculi.

2. They may be formed in *pouches*, congenital or acquired, that communicate with the prostatic urethra, catching up deposits from the urine and eventually forming stones that are more or less the moulds of the pockets that lodge them.

3. They may have their origin in the *kidney* or *bladder* and become lodged in the prostatic urethra secondarily where successive phosphate deposits cause an increase in their size and mould them to the shape of the passage, or diverticulum that gives them lodgment.

I shall now give the accounts of my cases and comment on them later.

CASE I.

Two Prostatic Calculi and one Vesical Calculus.

P., a highly neurotic Singhalese, aged 20, was admitted into the General Hospital, complaining of the following symptoms: Frequency of micturition (about ten times during the day and about fifteen times at night, giving him little sleep). Micturition was accompanied by a burning sensation, especially towards the end of the act, when he experienced a scraping sensation, beginning at the anus and ending at the meatus. In spite of severe straining the stream was thin and weak, and the last few drops contained a thick white precipitate—phosphates. Micturition was most easily accomplished when he lay on his side, but was almost impossible when standing, owing to sudden blockage and interruption of flow. This effect was no doubt contributed to by the loose stone I subsequently found in his bladder. During the day, therefore, he found it easier to micturate sitting on his haunches (a method much in vogue amongst the natives here). Micturition under the best of circumstances was torture. I saw him lying on his side straining prodigiously, groaning in agony, and pressing with his fingers forcibly on the perineum, and the result of all was a thin feeble stream of urine rapidly passing into a few drops, which soon ceased.

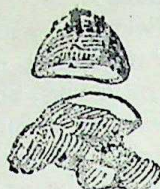
There was dribbling in the intervals of micturition, but the bladder was not distended. He sometimes felt a small foreign body move in the fossa navicularis (referred sensation). He never passed blood or stones per urethra: but has often noticed white pieces like "cocoanut scrapings" in his urine. There were no genital symptoms. This state of things had been going on for ten months.

The patient had undergone twelve months' imprisonment in a Ceylon gaol, from which he was released only three months ago. In gaol he had done hard labour on a diet of rice, coffee, dry fish, hard bread, and meat. After one month's imprisonment he received lashes. He had hardly been three months in gaol when he noticed the first symptom of his disease, namely, frequency of micturition.

On making a rectal examination, which I had to do under anaesthesia, owing to the severity of pain, I felt the grating of two stones lodged in the region of the prostate, and confirmed this on

passing a sound, when I also detected another stone lying loose in the bladder. Prostatitis and deferentitis were present.

Operation.—I performed suprapubic cystotomy and removed three stones—one from the bladder 3.2 cm. long, and two from the prostatic urethra, 2 cm. and 1.4 cm. in their longest diameters, respectively. I found the bladder wall very attenuated. The prostatic stones I reached by passing my finger through



1.—Stones in prostatic urethra. (Actual size: A, 1.4 cm.; B, 2 cm. by 1.5 cm.)

the internal meatus, and extracted them with scoop and finger, aided by a finger in the rectum, without very much difficulty. They were situated about $\frac{1}{4}$ in. from the neck of the bladder; the semilunar stone was removed first. These stones were faceted for articulation with each other, and, as will be seen from the diagram, are not unlike the scaphoid and semilunar bones of the carpus. The stones were composed of phosphate and calcium carbonate.

I did not keep in a rubber catheter at the time, and regretted it afterwards, as I was only able to do so after dilating the urethra with sounds a couple of days later. I corrected his phosphaturia with urotropin, acid sodium phosphate, and a bitter infusion.

In three weeks the patient left hospital with no unpleasant symptoms and quite cheerful.

Certain points in the case call for remark.

Casper favours the pre-rectal route in the extraction of prostatic stones; I think I was well advised in having adopted the suprapubic approach in this case.

Judging from the contour of the two prostatic stones, their accurate adaptation, and the presence of phosphaturia, I think the conclusion that these stones were formed primarily in the prostatic urethra justifiable. I am inclined to believe that the narrow portion of the bigger stone projected into the membranous urethra, the narrowest portion of the passage; it is significant that this constricted part measure 1.2 cm., the length of the membranous urethra.

The overwork, anxiety, intimidation, and bad food inseparable from the life of a convict seem to have been the causative factors in the production of the phosphaturia and calculi. At any rate, the symptoms began only three months after he went into prison.

Pressure on the perineum was an aid to micturition, serving probably to cause a slight dislodgment of the calculi. The feeling of a foreign body in the fossa navicularis was a referred sensation. Difficulty of micturition when standing was an effect of the action of gravity on the prostatic stones, whilst the sudden blockage to

the urinary flow must be attributed to the vesical stone.

Dribbling in the intervals of micturition is attributable to the inability of the prostatic sphincters and the compressor urethræ to act. The latter probably owing to the intrusion of the narrow neck of the lower stone within the membranous urethra. In other words, there was mechanical incontinence of urine.

CASE 2.

One Vesical Calculus and 12 Prostatic Calculi removed by suprapubic cystotomy; subsequent perineal drainage.

W., 19, male, Singhalese, agricultural labourer, was admitted into the General Hospital, Colombo, on the 5th September, 1912, complaining of great difficulty in micturition, accompanied by a burning sensation in the urethra during the act, and of pain in the hypogastrium and penis at all times, but worse at night. He was in a highly nervous state and was continually trembling.

The present symptoms began with a white urethral discharge and burning pain, which he noticed for the first time about one year ago. He denied ever having had sexual intercourse. The symptoms continued in greater or less degree until the present time. When he came under observation micturition was very scanty and accompanied by a severe burning sensation all the way down the urethra. By dint of much straining he has been able to squeeze out a few drops of urine at frequent intervals, about 10 times during the day and 10 to 12 times during the night. A purulent urethral discharge was present, which on microscopic examination proved to be free from gonococci.

On digital examination per rectum the prostate felt stony hard, was slightly crepitant, and very painful; this at once settled the diagnosis. Further on exerting pressure on the prostate a drop of sero-purulent discharge appeared at the meatus.

Examination of the urine.—Sp. gr. 1015; alkaline; slight trace of albumen present; there was no evidence of blood; phosphates, pus, and epithelial cells were present in abundance; no gonococci in centrifugised deposit.

Operation.—On the 10th September, 1912, a sound was introduced into the bladder without much difficulty, and a grating sensation was communicated to the hand from the region of the prostate; this confirmed the diagnosis already made; also a characteristic click told of a calculus free in the bladder. Through a suprapubic incision a stone, a little smaller than a hen's egg, was removed from the bladder; and by means of a finger passed through the bladder meatus, aided by a finger in the rectum, no less

than 12 faceted stones of various shapes and sizes (see fig. 2) were extracted from the prostate, which was found to be tightly packed with them; removal of the first was a somewhat difficult matter, but after that there was not very much difficulty with the rest; they were all removed by the index finger without the aid of scoop or forceps. A large rubber drainage tube was passed into the bladder and a gauze strip to the fossa of Retzius. The patient's condition after the operation was grave and showed signs of profound shock, from which he rallied under saline proctolysis, warmth, etc.

Progress.—The temperature varied from 97°F. to 103°F. for the next twenty-two days, during which time he was given urotropine and acid sodium phosphate. There was a tendency for pus to accumulate in the prostatic cavity left by the removal of the stones: this was overcome by massage per rectum combined with urethro-vesical irrigations by means of a short nozzle, the irrigating fluid finding an exit in the suprapubic wound. These measures however proved insufficient and the temperature kept up. On the 2nd October, the urethra was dilated with sounds and a quantity of encysted pus was liberated from the prostatic region. On the 12th October, the temperature still keeping high, a catheter was again passed, under anæsthetic, and a large quantity of pus was again liberated from the same area. As the temperature still kept up and as the patient was now in a rather low condition, he was anæsthetised for the third time and perineal drainage of the prostatic pouch was established. After this his condition improved, but his temperature still continued fitful. On the 24th November a para-vesical collection of pus was evacuated, under anæsthesia, by reopening the supra-pubic wound, which had quite healed by this time. From then onward recovery was uneventful but slow, and except for urethral dilatations on four subsequent occasions nothing more was done. The patient left hospital quite recovered from his prolonged illness and without fistulæ. I have lost touch with him since then.

Description of Calculi.—The vesical stone measured 5.3 cm. × 2.5 cm. It was rough and spiculated on its surface, as rapidly growing phosphatic calculi often are. It was laminated, the outer laminæ fracturing easily in flakes.

The prostatic calculi were 12 in number. Two of the largest measured 2.2 cm. by 1 cm. and 2 cm. × 1.8 cm., respectively. The smallest was 7 mm. One was almost as round and smooth as a small marble, but it too, like the others, bore the faint but distinct marks of two facets. The rest were of various shapes and sizes; they fractured easily, and carried different-shaped facets, many of which were saddle-shaped. One of them presented as many as 4 facets; several contained 3 or 2; even the smallest had at least

one acet. They were somewhat rough on their non-articular surfaces. Some fractured fairly easily, others were harder and more compact.

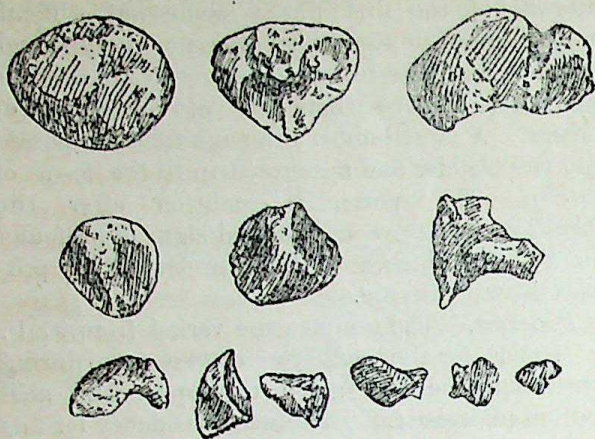


Fig. 2.—Twelve Prostatic Calculi showing facets. Natural size.

When dry they presented a mottled appearance ; and were stained a patchy light yellow.

Chemical composition of the calculi.—The vesical calculus and one of the prostatic calculi were sent to Mr. C. T. Symons, to whom I am indebted for the following analysis :—

The vesical calculus consisted of a dense inner core, which contained mostly urates with some calcium phosphate. The next layer, which was looser, contained the same mixture but not so much urate. The outer loose layer contained calcium phosphate with a trace of calcium carbonate, but no urates.

The prostatic calculus was composed in its central part largely of urates ; the outer portion contained in addition a considerable proportion of calcium phosphate.

Comments.—Judging from the history of this case I am inclined to think that the large stones shown in the figure were formed primarily in pouches communicating with the prostatic urethra. This form usually occurs in young men. The case previously reported by me also comes under this category. What the origin is of the pocket that predisposes to this stone formation, it is difficult to say ; perhaps in this case it was congenital in the first instance, and then as the stones gradually formed they excavated for themselves roomier recesses by irritation round stagnating deposits, thus preparing the way for further deposits and faceted calculi. Chronic abscesses of the prostate may, it is true, open into the urethra and create a pocket in which a calculus may lodge or form ; but there is no reason to suspect such an origin in this case, as there was no antecedent history of prostatic trouble ; his earliest symptoms were urethral discharge and a burning sensation on micturition, which were no doubt the result of calculus irritation and not the cause of their formation. The composition of the core of the prostatic

stone (urates) may suggest the view that a renal calculus formed the nucleus of the stone, but there is no evidence to support this in the absence of preceding symptoms of renal colic or discomfort. There is surely no reason why calculi having other composition than phosphates or carbonates should not be formed lower down the urinary tract than the kidney ; a recess opening into any part of the urinary channel, or the part immediately behind a stricture, is quite capable of catching up or filtering of *any* urinary sediment whether organic or mineral. The view that obtains with some that only phosphatic stones are formed *in situ*, and that urate, uric acid, and calcium oxalate stones found in diverticula must necessarily come from above, does not seem at all feasible.

If we look at the symptoms in this case we find that the main ones were,—Great frequency and pain on micturition, and a purulent urethral discharge. The *highly nervous state* of the patient was also a striking symptom, which I noticed in my previous case ; it is due as much to pain and loss of sleep and rest as to the peculiarly unnerving nature of prostatic stimuli. The evidence of this case seems to point to the conclusion that stones may form in the prostate and give rise to no great symptoms until secondary infection or projection of the calculi into the urethra or against the vesical neck cause symptoms of urgency.

The diagnosis of these cases would not be difficult if one kept in mind the possibility of their occurrence, and made routine rectal prostatic palpation a rule in the examination of all genito-urinary cases. It is on the rectal feel that the diagnosis is made, and this may be confirmed by the sound only when the stone projects into the urethra. The X-ray is of course invaluable.

As regards the operation performed in this case I was no doubt ill-advised in the choice of my route. The tardy convalescence, and the need for operative interference on four separate occasions proves conclusively that the perineal route should have been the route of choice in this instance, as it would have afforded the best means of draining the prostatic pouch and diverticula left, after removal of the stones, in which fetid urine and pus collected and caused infection to spread along cellular planes, giving rise to para-rectal and para-vesical abscesses.

CASE 3.

Forty-six seedling Calculi of the Prostate, combined with urethro-rectal and other fistulæ, and strictures of the penile and bulbous urethra.

S. A. 35, male Singhalese, cultivator, came into hospital on the 31st January, 1914, complaining of great difficulty in micturition ; he had also two urinary fistulæ. There was

and several fistulae present. The symptoms therefore should be warily interpreted as those caused by the calculi are almost hopelessly obscured by the other conditions. Most of the symptoms recorded were no doubt due to the strictures and fistulae rather than to the prostatic stones.

The absence of seminal emissions may have been due to,—1. Occlusion of the common ejaculatory ducts by the prostatic abscess and stenosis of the vas and ducts of the epididymis on one side at least—the left, where an abscess is said to have formed. It is significant that there was no atonic impotence so often associated with chronic prostatitis.

2. The presence of urethral strictures and fistulae: these are of themselves sufficient to prevent any seminal fluid present from appearing at the meatus. The fact that a son was born to him about eight years after his initial attack of gonorrhoea and epididymitis is proof that the ducts from the testicle were not completely destroyed or occluded before that time. The events that occurred after this were (a) the prostatic abscess, which burst into the rectum, and (b) the gradual tightening of the urethral strictures. It is, therefore, probable that the prostatic abscess was responsible for the absence of seminal emissions by destroying and occluding the openings of the ejaculatory ducts or by directing what little seminal fluid there was down the fistula into the rectum, the impassable bulbous stricture helping in this.

SPECIFIC FEVER OR SYPHILITIC SEPTICÆMIA.

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I WISH in the following note to draw attention to a somewhat neglected aspect of syphilis. It is, of course, well known that syphilis is often accompanied or complicated by a rise of temperature: the early periods of the disease—that of sore throat, glandular swellings, eruptions, etc., not uncommonly so. In cases of this type one has usually something definite to base the diagnosis on and the fever is not regarded as of any great importance.

In several cases that have come under observation during the last year or so, in hospital and in private, the outstanding feature was the fever without any of the usual manifestations of syphilis and often without any history of a primary sore or even a secondary rash.

Three examples of this type are described below, but many more might be put on record as the condition is not at all uncommon.

CASE I.—European male, aged 35, unmarried, was admitted for fever and headache on the 24th July, 1918.

History: The patient had enteric fever in 1907 whilst in German East Africa. He denies all history of syphilis, but admits that he had gonorrhoea. In 1915 and 1917 he had severe attacks of malaria (so called), also dysentery.

For the year previous to his present admission to hospital he has suffered from fever, rising to 103°F. or 104°F. Occasionally breaks of two or three weeks in the fever occurred. The fever was accompanied by considerable prostration and general weakness and there was a continual headache, whether fever was present or not.

The patient during this year was treated in German East Africa, in Egypt, in Bombay, and in other parts of India. In fact he spent most of his time in different hospitals with very little benefit.

When admitted into the Medical College Hospital in July, 1918, the patient was in a serious condition, the headache was severe and, as will be seen from the chart, he was running a septic type of temperature.

All the usual remedies were tried and failed to do any good; also the ordinary clinical examinations of the blood, urine, sputum and X-ray examinations of the chest and abdominal organs failed to throw any light on the cause of the fever.

As malaria, coli bacilli, tubercle, etc., were all excluded, we arranged for a Wassermann reaction to be carried out and, as soon as the blood was taken, put the patient on anti-syphilitic remedies. To our agreeable surprise, the temperature fell to normal within 48 hours and his condition gave us further trouble. A few days afterwards the result of the Wassermann reaction was received, which was markedly positive.

He was given a full course of anti-syphilitic treatment, which he still continues. Seen nine months afterwards, he is in good health; has had no return of the fever and has never had a headache since leaving hospital.

CASE II.—Wangloom, a Chinaman, aged 35 years, was admitted for fever. The ordinary methods of clinical examination failed to reveal any cause for the patient's condition.

No history of specific disease could be obtained, but there were some scars on his legs which were suspiciously syphilitic in appearance.

Having excluded the more common causes of fever, this man was placed on anti-syphilitic treatment. In a few days his temperature came down and his general condition improved most remarkably.

One feature exhibited by both these cases, and one also which is very commonly seen in such cases, is the very great improvement that takes place in the physical appearance and the general condition of these patients, when specific treatment is pushed.

These two men after a few days' anti-syphilitic remedies passed from a weak, febrile condition and a dull, stupid appearance to comparative health.

Case I was very weak and greatly prostrated, yet as soon as the temperature came to normal and the headache disappeared, he very quickly regained his strength and vitality.

CASE III.—M. Prosad, Hindu male, aged 50 years, was admitted into the Medical College Hospital for irregular fever, which had been running on and off for over two months. The spleen was slightly enlarged, about one finger from the costal margin; nothing abnormal noticed in the lungs nor in the heart. There were no malarial parasites in the blood nor was there any leucocytosis. He was put on an ordinary diuretic and diaphoretic mixture and quinine bichloride in adequate doses. The temperature went on for four days, had a remission on the fifth day, but went up again after twenty-four hours.

We stopped his quinine and put him on potassium citrate to make his urine alkaline, just to eliminate the possibility of a B. coli infection. The urine became alkaline in twenty-four hours, but the fever went on irregularly. Then we started injections of soamin. He had five injections of soamin without any marked effect on the temperature. We then sent his blood for Wassermann test and gave him an intravenous injection of 0.3 gm. of novarsenobillon. The temperature settled to normal in three days and kept normal for nine days after the injection when the patient left the hospital. We got the blood report in due time; it reacted moderately to Wassermann reaction. The patient was put on potassium iodide (one drachm twice a day) one week after the injection of novarsenobillon.

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JULY.

KIDNEY DISEASE AND KIDNEY FUNCTION.

FROM the time of Bright the whole subject of kidney disease has been visualized by the physician from the standpoint of morbid anatomy and histological pathology. Every case of kidney trouble has been classified from an etiological and anatomical basis as some variation of glomerulo-nephritis.

Clinically, the ordinary cases of chronic nephritis—particularly those of the large, white variety—were looked upon as of very serious import and the prognosis was generally very grave. The cardio-renal type of the disease was considered only slightly less grave.

In the days when the presence of albumen and casts were the basic signs of renal disease the diagnosis of nephritis was a simple matter; yet, to-day the certainty of such a diagnosis on such premises is by no means accepted. By different methods of examination of kidney function combined with the chemical analyses of the blood, very considerable advances have been made in recent years with regard to the determination of the true state of the kidney, and as to whether nephritis is really present or not.

The pathological concept, which taught us the various forms which kidney disease may assume, is now no longer adequate as a criterion for renal diagnosis, owing to its frequent failure to correspond with clinical manifestations and urinary signs. Similarly, the experimental forms of nephritis produced in animals—although they have demonstrated the intimate relationship between the pathological changes and the functional activity of the kidneys—cannot be applied directly to the clinical diagnosis of nephritis, for the reason that the conditions under which nephritis is produced experimentally and those under which it arises clinically, are not comparable.

Amongst the newer methods of diagnosis the place occupied by renal function tests is assuming greater importance daily, yet the information yielded by such tests is often inconsistent and misleading, for the reason that the position of

the kidney in the animal economy is such that alterations in renal function may arise from causes outside the kidney.

We are indebted very largely to America for a great deal of the recent research work on kidney disease, and particularly to Epstein, who has devoted himself largely to this line of research. In a recent paper on the *Diagnosis of Nephritis*, Epstein lays stress on the fact that our view of nephritis must be comprehensive and that we cannot rely on any single method of investigation for the proper understanding of abnormal kidney conditions.

In the present state of our knowledge the diagnosis of nephritis is confronted with two distinct problems: first, the determination of the pathological processes involved, and secondly the evaluation of kidney function. The acute forms of the disease, acute glomerulo-nephritis, acute non-suppurative interstitial nephritis and acute tubular nephritis or nephrosis—these often constitute the forerunners of contracted kidney or large, white kidney—are essentially different from the chronic forms of nephritis. In them we have to deal with acute changes and damage to a normally functioning organ, which, previously sound, is again more or less quickly restored to normal, provided it is not overwhelmed by the destructive agent. These types are usually due to bacteria or their toxins: their tendency is to recovery, provided the infective factors be no longer present and active, to work new damage to the kidney. Such conditions are exemplified in the kidney involvements seen in infective conditions, postpartum sepsis, suppurative sinus thrombosis, and even in the renal disorders which frequently occur in febrile diseases of all kinds: in these there is not that marked evidence of renal involvement that is usually to be found in true cases of nephritis, nor does the disturbance last much beyond the duration of the febrile attack. Even in scarlet fever the accompanying nephritis as a rule disappears.

On the other hand, in persistent and recurring infections the condition may go on to chronicity, and the evidence is strong that infected tonsils, sinuses, and pyorrhoea may account for many cases.

Chronic nephritis may arise from a great number of causes and present not only a great number of etiological factors, but also a great

variety of symptom combinations. Certain clinical types, however, occur with such regularity that definite rules may be established for their recognition.

Thus Widal groups chronic nephritis into two general classes:—(1) the azotemic, to which belong the chronic interstitial forms, primary and secondary, in which retention of nitrogenous waste products in the blood occurs, leading to and terminating in uræmia; (2)—the parenchymatous forms, which are characterized by the retention of water and salts and the development of œdema. These forms, however, are rarely pure, so that the clinician finds himself embarrassed in appraising the relative value of the heart, the blood vessels and the kidneys as factors in the production of some of the symptoms.

Albuminuria, with or without casts, is still the cardinal point round which all questions of renal diagnosis revolve. Given a case with albumen in the urine, the question arises is it a nephritis—a definite renal lesion or some other disorder?

To the answer of this question the present day methods of functional tests are becoming more and more essential as the knowledge of their importance becomes disseminated.

The functional methods of renal diagnosis, generally speaking, are divisible into two groups:

(1) Those that aim at determining the character and extent of the renal disease by estimating the response of the kidney to physiological and other specially selected stimuli;

(2) Those that aim at determining the nature and degree of the damage arising from the insufficiency of the kidneys.

To the first group belong those tests that depend on the excretion of substances administered in known quantities, which are recoverable more or less completely from the urine. Of these tests for estimating the general excretory capacity of the kidneys the best known is the phenol-sulpho-naphthalein. Although this and other tests of the same type—such as Schlayer's adoption of water and lactose as indicators of glomerular activity, and of sodium chloride and potassium iodide as a measure of tubular function; or the methylene blue test—may and do throw light on the condition of the excretory powers of the kidneys, the matter is not so simple as these tests would appear to indicate. It is a mistake to regard any one functional test as

being capable of measuring renal function as a whole, as each test at best, covers only a limited range of the kidney activities.

It is mainly for this reason that another group of functional tests, those that aim to determine the nature and degree of damage arising from disease of the kidneys, has come into being. The normal function of the kidney comprises the elimination, amongst other things, of the waste products of nitrogenous metabolism, and any failure on the part of the kidneys to functionate properly causes a retention of those substances in the body and their accumulation in the blood. It is therefore by the chemical analyses of the blood in kidney disease that real light can be thrown on the damage suffered by the kidney and that the presence or absence of true nephritis therefore can be determined.

The chemical analyses of the blood measure one or other of these nitrogenous substances. The total nitrogen, the non-protein nitrogen, the urea, uric acid, etc., also the phosphates, chlorides, alkalinity, etc.

The level of the non-protein nitrogen must be determined as the resultant of at least three factors—kidney efficiency, diet, and protein katabolism—and due credit must be given to each in appraising the functional activity of the kidney.

The normal percentage of non-protein nitrogen and of urea present in the blood may be taken to vary from '02 to '03; anything higher than the latter figure would therefore show a deficiency in the excretory functions of the kidneys.

Where œdema is present allowances must be made for the dilute condition of the blood, which is a common source of error. This can be obviated by determining the ratio between the total nitrogen and the non-protein nitrogen of the blood. A considerable amount of work has been done on kidney disease and kidney damage complicating diabetes by the members of the Indian Diabetic Enquiry—the record of which will appear in the July number of the *Indian Journal of Medical Research*. It is sufficient at present to state that the ratio should be at least as 100 : 1, whereas, where there are any clinical signs of renal trouble, the ratio falls rapidly and, in severe cases, reaches a proportion of 5 to 10 : 1. It was found that in practically all forms of kidney disorder, even when these were due to outside causes, such as failing heart

sepsis, etc., there was a distinct tendency to non-protein nitrogenous retention. In the interstitial variety urea, in particular, was often retained in the blood to an extent, twenty to thirty times the normal.

These findings throw a considerable amount of light on the cause of death in many diseases besides those frankly renal in character: thus diabetics, in India, may be taken in the very great percentage of cases to die from failure of kidney function, and not from diabetic coma. Coma, if a cause of death at all, is uræmic, not diabetic in nature.

It was practically invariably found that where albumen, even in small quantities, or albumen and casts were present, distinct signs of retention of nitrogenous waste-products were present in the blood. Many cases, even where the retention was considerable, could be greatly improved by dietetic and other forms of treatment, and the albuminuria often be made to disappear. This is a most important result, as the generally accepted opinion in such cases is that once the kidney is sufficiently damaged to show such marked signs of chronic disorder of function, the chance of recovery is meagre. We are glad to see, in connection with these findings, that Hunt, in discussing the etiology of nephritis (Annual Meeting of the Medical Society of the States of New York.), shows that once the etiological factors, acting as the cause of the kidney trouble, are removed a very great amelioration of the condition follows; in some cases the patients are probably completely cured. In the diabetic forms of albuminuria seemingly complete cure of the kidney disorder can be obtained, if the treatment is begun in time and is thoroughly carried out.

Yet these same cases of diabetic albuminuria if left to develop will inevitably go on to a condition of marked nitrogenous retention and end in uræmic coma, unless carried off by some intercurrent affection.

By means therefore of frequent analyses of the blood the clinician is in a position to appraise the margin of usefulness in the living functioning kidney, to study the effects of treatment in raising that margin, and to follow intelligently the course of the disease, and the effects of even mild infections in depressing the eliminating powers of the disordered kidney.

This is a very different position from that which has hitherto been held, where all our clinical impressions of the living patient were made to conform to the anatomical picture of the dead patient's kidneys. It is obvious that so far as the physician and patient are concerned, the chief interest lies in the question as to what the kidney can do, and not in the realization of how great the anatomical changes are which the organs may have undergone. It is now well recognized that moderately or even fairly advanced change of structure may impair the kidney function to only a small extent, whilst, with little visible change in structure, great functional disturbances may be present.

Another practical step of great importance in the treatment of certain forms of chronic nephritis has been made possible by the blood findings in kidney diseases. The usual teaching, founded on the general belief that nitrogenous waste products are always retained, was that the diet in all cases should be confined to one furnishing a low protein content.

As soon, however, as it was discovered that there were types of kidney diseases in which the blood showed no increase in nitrogenous waste product, but instead showed a very great depletion of the essential protein elements of the blood, the question at once arose whether a more liberal protein type of diet was not strongly indicated. Epstein was the first to advance this view and show that great improvement in the condition of those suffering from this type of nephritis followed on the change from a low to a high protein dietary.

Sir T. Clifford Allbutt, in a recent lecture on Renal Dropsy—published in the *British Medical Journal* of October, 1918—gives a most interesting and illuminating account of his success in treating a very severe case of chronic nephritis according to the newer ideas advanced by chemical physiologists. The underlying idea is that the poverty of the blood in proteins—and probably a particular type of protein, the globulins being in great excess—leads to malnutrition and low osmotic tension in the blood, so that water is retained in the tissues and thus dropsy ensues. By diet we hope to change this condition and increase the protein colloid content of the blood, thus determining a flow of water to the blood from the tissues, and at the same time increasing the nutritive value of the blood.

Thus the latest advances in biochemical research would appear to point to a complete change in the method of treatment of chronic parenchymatous nephritis.

It would seem highly probable that the poverty of the blood in proteins is due to the very large losses of albumen by the urine, which are characteristic of this particular disease. So great indeed may this loss become that the tissues may have a greater colloid content than the blood, thus upsetting the ordinary osmotic relationship. Whilst this holds good, it is absolutely futile to expect to be able to get rid of dropsy by diuretics, diaphoretics, etc.

Further, one characteristic finding of the blood in this type of case is lipæmia, largely the result of tissue breakdown. The abstraction of lipoids from tissue cells causes the inhibition of water with consequent swelling of the cells—cell œdema. Clifford Allbutt says that therefore the diet should be largely exclusive of fat—with this view we are inclined from our experience to disagree. Surely if by the administration of fatty food materials we can save the lipoids of tissue cells from being broken down, fat would be indicated in the diet. It is probable, however, that the lipæmia is a bye-product in the breakdown of the tissue cells, and that by feeding on a high protein diet, the tissue cells are spared, and thus the lipæmia obviated and cell œdema prevented.

Similarly carbohydrate food—the great sheet-anchor heretofore in the dietetic treatment of chronic parenchymatous nephritis—is under suspicion. One of the main products of carbohydrate metabolism is water, and therefore an excessively carbohydrate dietary may favour and promote the accumulation of water in the system and thus originate or increase the anasarca and dropsy.

The whole subject is of absorbing interest, and it is in the field of biochemistry and physical chemistry that we look to for the next great advances in the scientific treatment of many diseased conditions.

In connection with the treatment of chronic parenchymatous nephritis by a dietary of high protein value, we hope to publish in the next issue of the *Indian Medical Gazette* an account of an exceedingly interesting and instructive case.

Current Topics.

BLACKWATER FEVER.

ARTHWRIGHT and LEPPER (Trans. Soc. Trop. Med. and Hyg.) in reporting a series of sixteen cases occurring in the Eastern Mediterranean, arrive at the following conclusions:—

1. Blackwater fever is due to malaria.
2. It is predisposed to by a long-standing malaria infection with repeated relapses.
3. An attack of blackwater fever is precipitated by a relapse or recurrence of malaria.
4. The ascertained *maximum* and *minimum* intervals in different cases in our series between the arrival in a malaria country and the first attack of blackwater fever were *maximum* ten years, *minimum* seven months; between the first recognised attack of malaria and the first attack of blackwater fever were *maximum* ten years, *minimum* fifty days; between the arrival in a country which was non-malarial and free from *Anopheles* and the first attack of blackwater fever were *maximum* five months, *minimum* one month.
5. Quinine in the class of cases with which we have met has no share in producing blackwater fever, nor has quinine treatment during or after the attack any effect in prolonging or reproducing hæmoglobinuria.
6. The jaundice of blackwater fever is certainly in some cases due to bile-pigment in the circulation.
7. It is possible to estimate the total amount of blood-pigment in the urine, whether in solution or in the deposit, after converting it into acid hæmatin (modified Sahli's method). The amount of hæmoglobin lost by the kidneys is much greater than would be ascertained by an attempt at direct hæmoglobin estimation of the urine. We are convinced, however, that the kidneys excrete only part—possibly a small part—of the hæmoglobin which is lost in an attack of blackwater fever.
8. The treatment which appeared to be of most value, was intravenous or rectal administration of physiological salt solution (NaCl 0.9 per cent.). Whether quinine is of value or not was difficult to decide, since all our cases had some quinine, and the intensity of the attack was no doubt different in each case.

Matko [Wien. Klin. Woch.] dealing with the interrelationship between quinine and urine in hæmolysis is led from his results to make the following suggestive remarks:—

The protective power of urine against a hæmolytic action of quinine depends upon its content of acid phosphates (K_2HPO_4) or Na_2HPO_4) which also exert *in vitro* a protective action. In order to prevent hæmolysis *in vitro* by .04 gm. of bisulphate of quinine, .007825 gm. of di-sodium phosphates, free from water of crystallisation, is necessary; the optimum amount is about .015 gm. As a result of these observations, the author surmised that the onset of blackwater fever is bound up with a disturbance of phosphate metabolism, and decided to treat a case of this disease with di-sodium phosphates. He injected intravenously a 24-year old man, 16 hours after the onset of blackwater, with 200 cc. of a 2.5 per cent. solution of di-sodium phosphate; seven hours later (6 P.M.) the urine was almost normal. One hour afterwards (7 P.M.), however, there was a severe relapse; at 10 P.M. 200 c.c. of the solution was again injected, and 8 hours later (6 A.M.) the urine was again

practically normal. Again at 7 A.M. a severe relapse occurred, and it was then decided to combine the di-sodium phosphate with sodium chloride, and at noon 120 cc. of a 6 per cent. solution (containing both salts in equal proportion) was injected. The result was astonishing, the hæmolysis ceasing immediately. The urine became clear one hour after the injection, and in 4 hours the hæmoglobinuria had completely disappeared.

The injection of di-sodium phosphate is followed constantly after about half an hour by a rigor and rise of temperature to from 39° C. to 40.5° C.; by combining the di-sodium phosphates with sodium chloride, the rigor and rise of temperature are avoided.

The general condition of the patient improved rapidly after the injections, which also had a remarkable effect on the blood. Before injection the red cell count was 3,000,000 and the hæmoglobin 40 per cent., and blood films showed profound changes in the red cells, e.g., marked poikilocytosis, etc. Two hours after the first injection the red cells numbered 5,000,000 and the percentage of hæmoglobin was 120: in blood films the red cells stained deeply and were all of normal appearance.

The author concludes that his observations on this case showed that on the one hand the injection of di-sodium phosphates resulted in the immediate disappearance of the severe blood changes, and the production of a normal red cell picture; and on the other hand that di-sodium phosphate in combination with sodium chloride brought the hæmolysis to a standstill.

QUININE IDIOSYNCRASY.

WE have all met with patients who have been unable to take quinine, and with many more who say they cannot stand quinine: the following authenticated cases however illustrate the fact that idiosyncrasy to quinine does exist:—

i. The author injected into a small hæmorrhoid of a young lady 3 minims of a 10 per cent. solution of quinine and urea hydrochloride. There followed collapse with shortness of breath and swelling of feet and hands, so severe that the gloves had to be cut off, and an urticarial rash from head to feet. The symptoms subsided in two days. This was the third similar experience of this patient, the dose each time being very small.

ii. A lieutenant aged 36 who had never been in the tropics and had a good personal and family history, went to Mesopotamia, where he took quinine for an attack of fever. He promptly got bleeding from the nose and gums, red spots on the skin and nausea. The liminal dose was 0.4 gm.; 0.6 produced the symptoms mentioned. Later in hospital, when 0.6 gm. had been received in three doses, there appeared nausea, vomiting, great exhaustion and weakness of voice; he was somewhat dazed, heart sounds very weak, face very pale; later, petechiæ over the whole body, hæmorrhage from the nose and gums. He was eventually invalided home. It is assumed that the quinine had an injurious influence on the walls of the small blood vessels and the author suggests that hæmorrhage in and under the lining membranes of the internal organs, as the endocardium and pia mater, would explain the general symptoms.

iii. The observations here recorded were made in the course of administration of prophylactic quinine to a considerable number of troops; how many and where is not stated. The dose was 0.3 gm. daily and, at first, 0.9 gm. once a week. After two months the bigger dose was dropped out and no more untoward symptoms

were seen. The symptoms, observed in 0.2 per cent. of the takers, were fever, a rash, and oedematous swellings. The rash took the form of urticaria, of scarlet fever, measles, erysipelas and in half the cases was attended with pruritus. In a few cases petechiæ were seen. The skin eruption left in some cases brown pigmentation. The oedema occurred chiefly on the face, about the pinnae and eyelids, and produced much disfigurement; the hands and feet also were affected. Fever was a feature in every case but one, a sudden rise reaching on an average 39° C.—(Extract *Tropical Diseases Bulletin*.)

THE ACTION OF FRUIT JUICES UPON THE TYPHOID BACILLUS.

REVIEWING Ko's article in the *Journal of the Formosa Medical Society* the *Tropical Diseases Bulletin* gives the following interesting conclusions:—

In the Orient where fruit is exposed for sale under most insanitary conditions after having been handled by any number of hands, probably none too clean, and often eaten raw on the street corner or just as purchased, a study like this is very timely.

Most fruit juices which are acid have a bactericidal action upon any typhoid bacilli that might gain entrance through the broken skin but naturally would not be able to overcome any outside contamination. Half-ripe fruit is usually more powerful in its sterilizing power than that which is fully ripe, the substitution of acid for sugar being the important change. Tannic acid is the strongest of the vegetable acids, followed by citric and tartaric and finally malic. Sugars and starches have no antiseptic action no matter how strong, rather encouraging than interfering with the vitality of the organism.

Solutions of acids for drinking purposes have considerable sterilizing power, the efficacy of these "lemonades" varying from that containing HCl, which is the strongest, through tartaric and sulphuric acid to citric acid, which is the weakest.

The list of those whose juices do not kill the typhoid bacillus includes—*Nephelium longanum* (longan fruit), *Citrus nobilis* (navel oranges), *Eryobotrya japonica* (biwa), *Mangifera indica* (mango), *Citrullus vulgaris* (water melon), *Eigen Caria*, *Pyrus sinensis* (pear), etc.

PASTEUR ON THE STAGE.

"A BOLD innovation," says our contemporary the *Paris Medical*, "was the idea to depict on the stage the life of a savant." But what fruitful lessons are to be learnt from the lives of some men whom the world has recognised as great. These tell of struggles and difficulties and of crowning triumphs, centralised in many cases around an ennobling type of human evolution. That is surely an object which lends itself attractively to dramatic treatment. At least the fact has appealed to a French playwright. There is now being performed in Paris a drama in five acts entitled "Pasteur." So full of glorious achievement was Pasteur's life that details for effective dramatisation admit of easy adaptation. The first act shows a class of students being instructed by a demonstrator. Then at a particular psychological moment—enters the Master. A war impression is imparted to the scene, for the time is 1870, when Pasteur, among his countrymen, was pre-occupied with the grave shadows which oppressed the French nation. As a consequence his laboratory had to be closed, and his work suspended during the war. In the second act fifty years is supposed to have elapsed. Pasteur is shown in the tribune of the Academy of Medicine

surrounded by a crowded assembly of hostile medical men. The scene depicts the violent criticism directed against his work to which, on occasions, he was subjected, emphasised by an old man at the age of eighty—Jules Guérin—challenging him to a duel. Nevertheless, the act ends happily, depicting Pasteur being presented by the President of the Academy with the Grand Cross of the Legion of Honour, "as the champion of truth and tenacity, not based upon obstinacy, but by conviction, revealing a character of incomparable majesty." The third act finds Pasteur tossed and torn by his conscience. He has discovered the anti-rabic vaccine. But his researches have only been confined to animals. He has not dared to test his vaccine upon man. Amid the distress of his mind, an old Alsatian comes upon the stage, bringing with him a son, aged ten years, who has been bitten by a mad dog. Here was the opportunity he wanted. But again his conscience disturbed him. Could he make the venture and inoculate the child? The inoculation was done. Much advantage, dramatically, is taken of the devoted attention displayed by Pasteur while following the effects of the inoculation, with the anxiety which befell him as to what the result would be, and the responsibility he had assumed in putting to the test in a human being a discovery fraught with such potential benefit to humanity. In the fourth act Pasteur is found in his country residence—ill, and wanting rest. His medical attendant discusses with him his case. But Pasteur is thinking of nothing else than of the boy and of the possible fate of his patient. Then amid his musings and misgivings the boy appears; Pasteur is satisfied that another triumph has been gained, and once more he is happy. The boy afterwards becomes an assistant in his laboratory. The last act represents Pasteur's jubilee at the Sorbonne, at which the President of the Republic, Carnot, embraces him in the name of France as the benefactor of humanity, and conducts him to the amphitheatre where are assembled the delegates of all nations. And so, by this play, as our contemporary observes, is being perpetuated the remembrance of a great Frenchman. The author of the play is M. Sacha Guity.—(*The Medical Press*.)

LEPROSY.

The following extract from Sugai's paper on the Chemiotherapy of Leprosy and Tuberculosis is worth producing in connection with the papers by Rogers and Chatterjee dealing with modern methods of treatment of these diseases:—

The author records his results with potassium cuprocyanide in leprosy and tuberculosis. In 36 cases of leprosy after one to three injections of a 0.1 to 1 per cent. solution every 10 days, the nodes gradually become soft or begin to bleed, diminish in size or are resorbed, the leprosy ulcers heal, form scars and eventually lose their characteristic colour, sensory disturbances are overcome, and the growth of hair is stimulated in places where it has fallen out.

In this paper he also gives tables showing results in rabbits and the histological changes and the results of treatment in tuberculosis patients. He thus summarises his experiments—

"1. Potassium cuprocyanid when injected intravenously has an extremely beneficial effect in leprosy. It is probable that a cure might be effected if the treatment were continued for from six months to a year.

"2. A completely therapeutic effect in tuberculosis in animals has been demonstrated. The animals which received intravenous injections lived longer than those

which had no treatment. After 8 to 10 injections the animals were completely cured.

"3. Potassium cuprocyanid obviously had a favourable effect on tuberculosis in man, including the pulmonary form."

It is to be hoped that these experiments will be widely repeated and the results confirmed if possible.—(*Tropical Diseases Bulletin*.)

THERAPEUTIC NOTES.

We are indebted to the *Medical Press* for the following notes on Dr. Pillet's new book, which are of great importance and interest:—

Dr. Pillet, in a book published recently, has devoted a chapter to the principal errors which are to be avoided when treating a case of urinary disease. The book is more especially addressed to the general practitioner, and the latter will find the advice given in brief, terse language very useful. The following is an abstract of Dr. Pillet's main points:—

1.—*Examination of the Urine*.—Never omit to examine the urine "in a glass" as to degree of colouration, clearness, or turbidness. Many patients suffering from stone or tuberculosis are treated as cases of simple albuminuria, when in reality the albumen is due to pus.

Always test for albumen, sugar, phosphates, urates, and pus.

2.—*The Use of the Catheter*.—In passing the catheter never attempt to "command," but "obey" the urethra. The instrument should merely follow the latter. Forcible catheterism (however near the catheter may appear to be to the bladder) always means making a false track, which may lead to the death of the patient if the urine is infected.

Stop as soon as a drop of blood makes its appearance at the meatus, modify the position of the catheter, or, better still, use a smaller one. It is relatively easy for a specialist, with his wide range of instruments, to "pass in a difficult urethra," whereas if the practitioner creates a "fausse route," an incision may have to be made in the perineum or hypogastrium.

In the male the use of the metallic catheter ought to be completely dropped. Its handling is delicate even for the specialist. In the female, however, owing to its being sterilised so easily, it is very useful.

A rubber catheter does not remain aseptic, and deteriorates in quality when kept too long in an antiseptic solution. As a rule it can be boiled for a few minutes without risk of damage.

3.—*Gonorrhœa*.—Never attempt to pass a catheter in a gonorrhœal urethra, for that means infecting the posterior urethra and the deferent ducts, i.e., one or both testicles (orchitis, with subsequent sterility); the prostate (abscess); the bladder (cystitis).

Never advise lavages by means of a small syringe, for the patient invariably obliterates the meatus completely, injects the solution with too much force, and if the solution is rather strong (which is usually the case), the posterior urethra and the prostate become infected. Before allowing the patient to apply the injections himself, he should be carefully instructed by the medical man, who ought to supervise the operation at first. In case of any complication all urethral treatment should be suspended.

No gonorrhœa, acute or chronic, should be treated without repeated microscopic examinations. Do not prescribe balsamic preparations during the first stages of gonorrhœa; this is the way that attacks are prolonged.

Do not prescribe the use of medicated bougies to be introduced into the urethra; if they are old they are liable to melt imperfectly and penetrate into the

bladder, and it is not an easy matter to remove them with the lithotrite, as I have found in several cases.

Gonorrhoeal orchitis never suppurates. Abscess of the prostate is nearly always due to a caustic injection used to abort gonorrhoea. The abscess should be incised through the perineum or rectum, and should not be allowed to open spontaneously in the urethra, for evacuation of the pus is incomplete and interminable. These patients always suffer from retention, and the urine should be evacuated by means of a soft rubber catheter. The state in these cases is a serious one, and requires urgent treatment, for a certain number of patients die from septicemia.

In cases of "morning drop," do not advise marriage until the beer test and repeated microscopic examinations have been made. Do not believe that an attack of gonorrhoea lasts for years, and that it is simply a case of relapse; nearly always there has been re-infection.

4.—*Stricture*.—In case of acute retention hypogastric paracentesis is much preferable to prolonged and irregular urethral manoeuvres.

In case of incontinence the bladder is not empty, but, on the contrary, distended. These cases (usually of long standing) may be cured by urethrotomy.

KING EDWARD VII MEMORIAL TUBERCULOSIS INSTITUTE.

The Hon'ble Surgeon-General G. G. Giffard made the following remarks at the annual meeting of the Edward VII Memorial Tuberculosis Institute, Madras :—

MR. CHAIRMAN AND GENTLEMEN,

I have several times inspected the Institute in its present quarters. Regarding the new site, I am glad to say that the Public Works Department are now satisfied that the foundations are correctly designed and the construction will soon be begun. Some hitch occurred over the building of the Muthiah Chetti Ward because the New General Hospital plans have been entirely redrawn and the place set aside for the building of the Muthiah Chetti Ward will not be available until the Government of India have passed the plans for the New General Hospital there. It must be disappointing that you have to wait, but it is unfortunately so.

I think some doubt seems still to exist as to the exact duties and functions of the Institute. The Institute is really only a part of the problem of dealing with the disease known now as tuberculosis. There is a change necessary in the public's idea of the disease. It was ordinarily known before as consumption. But although consumption is still and will be a large part of tuberculosis, because it is the most common and also the most popularly known, it is, however, very far from being the sole tuberculosis. Many persons suffering from lung disease come under treatment in the Tuberculosis Institute, but are not tuberculous. Many also who are suffering from tubercle in other parts of the body than lungs come under the treatment of the Institute. At present when one comes known as a consumptive, he is generally past treatment. Before patients reach such a stage in tuberculosis, they should find out in time the conditions of the disease and stop it. The Tuberculosis Institute is a sort of diagnostic out-patient room for tubercular disease. Many persons who go there suspecting that they may have the disease find they have not, and many who do not know they have the disease will be all the better for applying to Dr. Chandra Sekar and satisfying themselves that they have not the disease. In fact, it cannot be too widely known to the public that tuberculosis is

curable in its early stages. In the early stages it is difficult to diagnose, because an expert diagnosis is required to be quite certain that the diagnosis is correct, and although the ordinary medical man ought to have a very good knowledge of tuberculosis he cannot be expected to be an expert. The Tuberculosis Institute, therefore, is a place where cases in the earlier stages can be treated; but it requires as adjuncts to it two other kinds of wards—that is to say, the ward where the early cases can be treated, and the ward where the incurable cases can be treated.

Many persons are in doubt as to what the Institute intends to do. It is intended to be a place for early diagnosis and very early treatment, and also a place where students and doctors can learn the most up-to-date methods, and where the patients from Madras or Mofussil can come and receive expert opinion. It will do no harm to the city. Many have written to the papers and several have asked questions if the Tuberculosis Institute will not bring into Madras a large number of tuberculous patients, and, therefore, be a menace to the public health of the city. As a matter of fact, Madras already contains a large number of tubercular patients: there are more than 10,000 people who are suffering from the disease here, and even if the Tuberculosis Institute do bring in a few more cases, it will make entirely no difference. The other case in which Dr. Chandra Sekar's work in the Institute is criticised is that he uses tuberculin. It is undoubtedly a very dangerous drug in the hands of persons who are not thoroughly experts, but it is not in the least dangerous in the hands of persons who have made a very careful study of the subject.

It is the hope of those who have started the Institute that it will become the centre not only of treatment, but of training. With the spreading of knowledge amongst the laity much can be done, and they can safeguard themselves from being contaminated by tubercular patients. Dr. Chandra Sekar takes good care to safeguard the public around his patients as far as possible. It is also desirable that patients who go to the Tuberculosis Institute should be able to tell other patients how they are treated, and to advise them to seek advice in the same way. The Institute is thus an advisory as well as a medical and curative one.

I may say I have inspected the institute and think it is carried on with considerable difficulty; but the work was very well done, and it will become more popular when the good that is being done is widely known. I am sure Dr. Chandra Sekar may well be proud of what he has already done. I hope that practitioners, both male and female, and students, will soon become aware of the fact that very valuable clinical guidance can be obtained there—a knowledge better than can be earned in ordinary hospitals. With these words I have great pleasure in seconding the adoption of the report.

: GUAIACOL IODIDE.

Dr. John Maberly, in the *Medical Journal of South Africa*, puts forward an interesting suggestion for the exhibition of iodine in diseased conditions, in the form of guaiacol iodide. He writes as follows :—

The first question we naturally ask regarding any new compound is: Does it supply any real want in the pharmacopœia, or enable us to deal successfully with any pathological conditions which are at present outside the scope of any of our at present known pharmaceutical resources?

From the experience which I have gained during the last five years of the action of guaiaco iodide,

I feel justified in contending that it fulfils both these conditions.

The pharmacopœia contains one organic form of iodine, namely, iodoform, which is very unsuitable for internal administration. Of inorganic salts we possess several, namely, the iodides of potash, soda, mercury, arsenic and iron. Of these, the one we most commonly employ with the object of obtaining the therapeutic action of iodine is potassium iodide.

The atomic weights of its two elements are: Potassium 39, and iodine 127. This means that in administering, say, four grains of potassium iodide, we are apparently giving our patient rather more than three grains of iodine, or, in the ordinary rate of dosage of about 15 grains of potassium iodide per diem, we are presumably administering 11·47 grains of iodine, or the equivalent of nearly one ounce of tincture of iodine, the latter containing 12½ grains of free iodine to the ounce. When we look at the question from this standpoint, we realise how very inert iodine in the form of potassium iodide must be. If it were not so, it would be impossible to administer such enormous doses of iodine and continue it over long periods without producing very undesirable results.

In the form of arsenic and mercury iodides we certainly have more active drugs, but in those forms the association of arsenic or mercury with the iodine complicates the question and still leaves us without any simple and effective drug for the administration of iodine *per se*. The tincture is also objectionable on account of its irritant effect on the gastric mucous membrane, and clinically does not appear an effective way of giving the drug.

It appears to me that what we really want is an organic form of iodine which shall be readily absorbed and broken up in the system and shall exhibit the therapeutic effects of iodine in a more marked manner than any of our present compounds. This I believe we have in the compound I am now bringing to your notice.

The following is the method of constructing guaiacol-iodine which I have been making use of for some years:—

Guaiacol, pur.	...	...	Minim	1
Solution Iodine (12½ grains in one ounce of Sp. Vin. Rect.)	...	...	Minim	1
Spirit. Vin. Rect.	...	...	Minims	20
Aq. Dest. ad.	...	...	Drachm	1

If the drugs are added in the above order, a slight rise of temperature takes place on the addition of the distilled water and a change gradually takes place in the mixture. The free iodine disappears and a stable compound is formed in which iodine is combined with guaiacol as a substitution product—a portion of the iodine replacing hydrogen in the guaiacol. Whether the whole of the iodine goes into this form or not is a question on which skilled chemical work might throw some light.

In the following records I have taken the above formula as the basis of my statements as to dosage, one drachm of guaiacol iodide representing 0·26 grain of iodine or roughly 1/50th* grain of iodine.

Guaiacol ($C_7H_8O_3$) is a colourless liquid, stated by Whitla to be the active constituent of creosote. Apparently it is a Continental product, as during the war the price has steadily risen to a very high figure.

In administering the drug, I always add an equal quantity at least of simple syrup and two drachms or more of pure or boiled water. The adult dose is one drachm given every eight hours in acute conditions for the first two to four days, afterwards reduced to twice a day. Children half a drachm.

The dose of iodine in the above is extremely small and yet the clinical results are very striking. I have twice produced an iodide rash in children under one year with the above given twice a day for 14 days. When we consider, however, the probably very small quantity of iodine normally present in the blood this fact need not surprise us.

So far as we know at present the chief supply of iodine to the system is through the secretion of the thyroid gland; the quantity present at any time is very small, and yet any increase or diminution in that amount gives rise to a set of symptoms which are a very marked deviation from the standard of normal health. It appears, therefore, quite feasible that such a minute dose of iodine as 1/50th grain, provided it is in a form to be readily absorbed and utilised in the organism, should be quite sufficient to have a marked effect in pathological conditions.

Some years ago the very unsatisfactory results which could be attained by any known therapeutic agent in tubercular affections very much impressed me. I found guaiacol of some use in early stages, but the results were very uncertain.

One day the idea occurred to me that if I could in some way combine guaiacol with one or other of the haloids, I might get more definite results. One of the fruits of that idea was the discovery of the method of constructing the guaiacol iodide. Clinical results, however, gradually forced upon me a very different opinion of the action of the drug from that which I originally set out to obtain. It soon became clear that the drug had very little effect in tubercular lung affections, but its use in place of potassium iodide in that class of case in which I had been accustomed to use the latter drug soon convinced me that it was a much more efficient agent. The absorbent action of the drug in chronic enlargement of the glands, in the treatment of the set of conditions we name "strumous," and which we now consider due to inactivity of the thyroids in chronic metritis, etc., was much more marked and rapid than that obtained by administration of potassium iodide; and when given in the form indicated with syrup and water has never given rise to any gastric irritation. The results obtained in the treatment of diseases associated with the cerebro-spinal fluid and membranes and the pleuræ promise, however, to place this preparation on a footing quite distinct from that of any known medicinal form of iodine.

In private practice it is rather a difficult matter to keep accurate records of experimental work. Most of the nursing is of a lay type, and the medical man perhaps only sees his patient once a day, or less frequently. Much of one's work with new drugs is at first tentative, and nothing but the impression of the result obtained is left as a mental guide for future use, but not in the form of an accurate scientific record, so that one has to ask a certain amount of indulgence in this respect.

Naturally one of the earlier methods of testing the value of the drug was in syphilitic affections. I tried it in various stages of this disease, sometimes in combination with inunctions of mercury, and found the results very similar to those obtained by the older methods of iodide of potash and hydrarg. perchlor.

Whilst stationed at No. 4 General Hospital, Robert's Heights, I had an opportunity of estimating the value of the drug and comparing it with other lines of treatment, and came to the conclusion that it was not of special value in syphilis, except that it was more rapid in its action. It was necessary to give salvarsan or similar compounds to complete the cure of acquired syphilis and obtain a negative Wassermann reaction.

In chronic glandular enlargements the drug appears much superior to any other form of iodide. I have

* 1/39th would, of course, be a nearer approximation.—Ed.

used it in quite a number of cases, and have found its absorbent action in these conditions much more rapid and efficient than that of any other method of administering iodine internally. Half to one drachm doses given twice a day for a few days, and then reduced to once a day, rapidly reduces the tenderness and enlargement of so-called tubercular glands, even when they are very much enlarged, provided they have not reached the stage of pus formation. In this case incision and the administration of guaiacol iodide will complete the process of resolution.

In the cases of children with a tendency to enlargement of the tonsils and adenoids, the administration of the drug has proved distinctly beneficial. No doubt many of these cases are really an expression of the lack of activity of the thyroid gland and consequent deficiency of thyroïdin in the blood, a modified form of the strumous diathesis.

I would now draw attention to some records in fields of therapeutics, where I believe guaiacol iodide will prove of especial value. Firstly, diseases associated with pathological changes in the cerebro-spinal membranes and fluid.

Dr. Maberly then proceeds to illustrate the good results obtained under different headings: meningitis, poliomyelitis, early tuberculosis of the bones, etc.

DYSENTERY.

Major J. Cunningham, I.M.S., and Captain H. H. Kink, I.M.S., from the results of an extended research on dysentery in the jails of Eastern Bengal arrived at the following interesting conclusions:—

(1) The great majority of cases of jail dysentery, when admitted to hospital, tend to get better of their immediate symptoms without any medicinal treatment. A restricted diet is sufficient to bring about this result and no better results can be produced by the more complete rest obtained by withholding all food while the acute symptoms are present.

(2) The disappearance of the actual dysenteric symptoms is hastened to a certain extent by the administration of a slight purge, such as a mixture containing soda and magnesium sulphate or grey powder.

(3) Salts appear to be superior to grey powder in the treatment of these cases, for the former causes the symptoms to disappear earlier and prevents immediate recurrences ('relapses in hospital') to a greater extent than the latter.

(4) None of the treatment tested appeared to have any influence upon the shortening of the convalescent stage of the disease (the length of stay in hospital).

(5) Treatment by a Shiga vaccine did not appear, as far as our cases went, to have any special advantage over other forms of treatment.

(6) The cases treated with emetin gave the same results as those treated with rest alone. Improvement following injections of this drug are, therefore, of no diagnostic value in the majority of cases of jail dysentery.—*Indian Journal of Medical Research*.

Major J. Cunningham, I.M.S., continued his researches on dysentery and in a recent number of the *Indian Journal of Medical Research* has published an interesting paper on Latent Dysentery. He concludes:—

(1) A latent form of dysentery exists, which may, when examined, show the presence of varying quantities

of mucus or mucus and blood in the stools, and ulcers in the rectum, and may also be secreting dysentery bacilli. Such cases may be compatible with apparent health and are therefore liable to pass undetected.

(2) The macroscopic examination of the stools for mucus or mucus and blood forms an easily applicable method of detecting these cases, and is much simpler and probably more effective than a bacteriological examination.

The method is not restricted to a population under restraint, but can be used in any community where stools can be regularly collected for examination.

(3) The estimation of the degree of existence of dysentery, as evidenced by repeated macroscopic stool examination, can be used, in the same way as the spleen rate is used in malaria, to form a "dysenteric index" of the prevalence of dysentery in a population.

(4) A series of ten successive examinations is sufficient to detect all the cases of latent dysentery present in a population.

With regard to the jails in which this inquiry was carried out—

(1) The occurrence of an acute attack of dysentery in an individual within a jail may be no other than a recrudescence of a condition which has been latent.

(2) The incidence of dysentery in jails may be accounted for in part—if not in greater part—by relapses occurring in prisoners who, when admitted, were suffering from dysentery in a latent form.

(3) The type of dysentery occurring inside the jails is merely the expression of the most prevalent form of dysentery in the outside population.

(4) All prisoners on admission to jail should be segregated and have their stools examined. Should they prove to be cases of latent dysentery, they should be further segregated in special gangs (post-dysenteric), until proved to be free from the disease.

Note.—The above conclusions have been based on observations made in a locality where the dysentery was endemic.

Heim (F.). Le salvarsan peut-il remplacer l'émétine dans le traitement de la dysenterie amibienne?

The author has tried the effect of salvarsan rectally and intravenously in a few cases of intractable amoebic dysentery with and without liver complications. The conclusions sufficiently represent the author's deductions from his cases.

"(1) Cases of amoebic dysentery occur in which salvarsan prove superior to emetine, in other cases emetine proves more efficacious.

"(2) The variable action of the two drugs depends on several little understood conditions, of which the chief appears to lie in the difference of the clinical forms of the disease: salvarsan is probably more effective in the purely intestinal form, it is certainly less active in the case where hepato-bronchial complications exist.

"(3) In using salvarsan the rectal method should first be tried, and the intravenous only in cases where the amoeba has extended beyond the large intestine.

"(4) Preferably one drug should be used at a time, combined therapy being reserved for very refractory cases.

"(5) Dysentery tends to relapse and to spread and should be treated as rigidly as typhoid or diphtheria. Every carrier of amoebæ should be closely observed and treated even when he presents no active sign of disease."—*Tropical Diseases Bulletin*.

BLACKWATER FEVER.

It is of interest to note that the Spanish observer, Lopez, from a study of the successful

treatment of blackwater fever, suggests the following solution to be given intravenously :—

Sodium chloride	...	20 grammes.
Calcium chloride	...	8 "
Sterile distilled water	...	1,000 c.c.

This is practically identical with that recommended, from experiments on the blood with hæmolysins, by Sutherland and McCay in the *Biochemical Journal*, Vol. V, 1911. The amount of calcium advocated by Lopez for intravenous injection is considerably higher than Sutherland and McCay found most effective in preventing hæmolysis. Their solution was—

Sodium chloride	...	12 grammes.
Calcium chloride	...	0.25 "
Sterile distilled water	...	1,000 c.c.

This solution has been employed most successfully in the treatment of several cases of blackwater fever in India.

CHOLERA.

THE following interesting method of treatment is given in the *Tropical Diseases Bulletin* :—

Kuhne (Victor). Que faire en cas d'épidémie de choléra ? (Une médication causale du syndrome diarrhéique.)—*Rev. Méd. Suisse Romande* 1918. Sept. Vol. 38, No. 9, pp. 555-569.

The author's experience, gained while in charge of a hospital at Nish after the peace of Bukarest (Balkan War), leads him to place the greatest reliance on Stumpf's bolus treatment to the exclusion of all others, including hypertonic saline injections, which he dismisses as merely symptomatic. He claims to have been able to reduce the mortality from 45 to 2 or 3 per cent. The method is to mix equal volumes of water and bolus alba (kaolin) *putting the latter into the former* (about 100 gm. of kaolin to $\frac{1}{2}$ litre of water) and allowing the patient to take a glassful *cold* every hour or half hour. It is rarely necessary to take more than 6 glasses (=about 200 gm. kaolin) in the first 12 hours. Generally the vomiting soon ceases, the pulse improves and the patient sleeps. During the second 12 hours and the following day one gives, according to the patient's condition, several glasses of the mixture, then for a few days a light diet. If the case is treated in this way from the beginning, cure results in 24 hours and the patient can leave the hospital in three days. Should the case be so bad that the stomach and intestines are atonic, the bolus mixture must be given by stomach pump, or if that is not possible as an enema. It is important that, during the 18 hours which follow the beginning of the treatment, except for water, neither food nor drink should be given.

All forms of gastric disturbance whether due to cholera nostras or metallic poisons, etc., are benefited by this treatment, which apparently relies upon the great absorbing power of the fine particles of aluminium silicate. An interesting history of the drug accompanies the paper.

LEPROSY.

DR. EMMANUEL ROBERTS in 1905 drew attention to the properties of a native drug—gugul—and

its value in the treatment of leprosy. He states that he has continued to use it with beneficial results. Dr. Roberts writes as follows :—

"Gugul is an oleo-gum-resin obtained from *Balsamodendron Mukul*, of the Natural Order Burseraceae, a native of Rajputana, Sind, Eastern Bengal and Assam. It occurs in irregular lumps formed of agglutinated tears of a reddish brown colour, and varying in size from that of a minute grain to a small lemon. It has a wholesome aromatic odour like that of cedar, and a bitter and aromatic taste not unlike that of myrrh. It consists of a gum, a resin, a volatile oil, and a bitter principle.

MODE OF ADMINISTRATION.

The crude drug is not suitable for internal administration. When purified it may be administered in doses of 5 to 20 or 30 grains.

The following preparations have been introduced :—

1. Extract Gugul Liquid Co. (1 in 1), composed of Gugul, *Adhatoda Vatica*, and Spirit of Chloroform : dose—One to 4 drams.

2. Tincture of Gugul (20%) with alcohol (90%). dose—Half to 2 drams.

The effects of gugul in leprosy are remarkable, so much so, that it may be looked upon as a specific. It stimulates the appetite, improves the general condition of the body, relieves the usual lassitude, gives a sense of well-being, relieves the nervous pains which are so very common, and produces a marked effect on the disease in a few weeks. The improvement is steady though slow, and all the three forms of the disease, tubercular, anæsthetic, and mixed, respond to the drug. Of the cases treated by me with gugul none has hitherto failed to respond to it, and improvement has been noticed even so early as two weeks after the treatment was begun.

From a consideration of the benefits derived in all the above-mentioned cases, I feel justified in looking upon gugul as a specific for leprosy, and in recommending its general adoption in the treatment of this loathsome disease."

THE QUESTION OF HOSPITAL EQUIPMENT.

THE Editor of the *Quarterly Journal of the Medical Missionary Association* writes as follows :—

In regard to the question raised in our last issue of the possibility of obtaining for medical missions hospital equipment which may become available on demobilisation, it is not possible as yet to give any definite pronouncement. A considerable amount of correspondence has taken place with the authorities chiefly concerned, and members may rest assured that the claims of medical missions will receive full consideration when any distribution of hospital stores may be in contemplation. Up to the present, however, there seems no reason to believe that there will be any auctioning of surplus stores since most of what is available will be made use of in permanent Government institutions.

The equipment of Indian military hospitals had been a frequent matter for unfavourable criticism long before the war, and now that the regimental system for Indian military hospitals is being given up and station hospitals established for Indian troops, there can be no doubt that very much of the war hospital equipment will be absorbed in bringing the permanent military hospitals thoroughly up to date.

A further question which is of interest in this connection is that of allowing medical missions to obtain supplies from the various Provincial Government Medical Stores. This has already been done to a very limited extent in certain Provinces, and the question of making the permission more general is at present under the consideration of Government.

It has for some time been a matter of discussion amongst certain members of the Association whether the conditions of membership of the Association are in all respects satisfactory. The present conditions, it will be remembered, are brief but fairly comprehensive:— "Graduates of recognised medical colleges of any nationality who are members of a permanent missionary organisation." It has from the first been assumed that the term "Graduate" is here used so as to include not merely the holders of University degrees but also of recognised diplomas. The introduction of medical registration in this country gives a legal qualification to all those whose Indian diplomas are regarded as qualifying them for registration; and the question arises whether the holding of such diplomas as those of Licensed Medical Practitioner or Sub-Assistant Surgeon or the mere fact of being registered by one of the Provincial Medical Councils can be regarded as a sufficient professional qualification for membership of the Association.

The reply to the important question above raised really depends upon a further question:—"What does the Association desire as regards its membership in general?" Up to the present, with exceptions so few as merely to prove the general rule, the members have all been themselves Medical Missionaries in the sense of having actual controlling charge of mission hospitals. This has not by any means excluded Indian medical workers from membership, since there are many such who have been placed in responsible charge of mission hospitals. Hitherto, however, the Association has not been regarded as intended for the members of the subordinate staffs of medical missions, house surgeons of hospitals, assistants in charge of district dispensaries, etc., and except in very few instances such Indian workers have not applied for membership.

It is for the members themselves to decide whether they wish the Association to remain restricted to those who are in the strict sense of the term medical missionaries, or whether to enlarge its scope so as to include all qualified (i.e., registered) medical workers in mission hospitals. The question is at present before the Executive Committee for preliminary consideration, but may probably need a reference to the whole Association for final decision, and the Secretary would be pleased to receive the views of any individual members on the subject which may assist the Executive Committee in the event of its being thought advisable to make proposals for an alteration in the rule.

Postscript.—I am glad to be able to add that since the above notes were sent to press, I have received an official letter of an entirely satisfactory nature on the subject of hospital equipment. I am not at liberty to quote the whole letter, but the following paragraph speaks for itself:

"As regards the medical missionaries being able to obtain some of the medical and surgical requisites which should become surplus to our requirements as demobilisation proceeds, the claims of the various mission hospitals throughout India to be considered when these are being disposed of will not be lost sight of.

I anticipate that we will have very large surpluses, for which we will certainly give medical missionaries preference over private firms if it comes to a question of selling Government stock in India."

We may therefore wait with confidence until the time of disposal of equipment stores, knowing that the

needs of medical missions will receive sympathetic recognition after the requirements of Government Institutions have been duly met.

RECENT WORK ON MALARIA.

LEYFARTH (*Berlin Klin. Woch.*, 1918), dealing with quinine resistant malaria as seen by him during two years' experience in Bulgaria, suggests that the drug fails owing to faulty quinine preparations or to deficient absorption from vomiting, constipation, or diarrhoea, which again may be caused by the malarial parasites, the quinine itself, or an infection with true dysentery. (2) Other infective diseases are present as well as malaria. (3) There is an acquired quinine habituation either of the organism or of the parasites due to protracted treatment with insufficient doses, too long continued uninterrupted treatment, or to quinine prophylaxis. (4) Protective substances are diminished or absent in consequence of unfavourable conditions of the patient's life. (5) In some regions there is absolute quinine resistance of certain strains. (6) The parasites are quinine resistant in the capillaries of certain organs.

He points out that for success in treatment the causes of quinine resistance in any case must be ascertained. Diarrhoea caused by quinine seems to have been not uncommon; it is an indication for parenteral administration; stomach disorders were present in no less than 25 per cent. of cases. He lays stress on (4) as a common cause under war conditions, and points out that in the last six months of 1917, 124 deaths of inhabitants of the small town in which he worked were attributed to malaria and 63 deaths in hospital were assigned to subtertian malaria with certainty.

Experience has led him to realise the necessity of interruptions in quinine administration, and the imperfect absorption of quinine per os from various causes to give it at the outset by the intramuscular route. The course adopted was

- 8 quinine days, 1 gm. intramuscularly.
- 5 days' pause.
- 8 quinine days, 1 gm. per os in divided doses.
- 5 days' pause
- 2 quinine days. " " "
- 5 days' pause.

Thereafter 1 gm. on two successive days in each week for 6-8 weeks. This was successful with fairly recent cases not habituated to quinine. Old chronic malaria, reacting little or not at all to quinine, had to be "sensitised to quinine by neosalvarsan." In the case of quinine habitués, whether from treatment or prophylaxis, and when those in the latter class have been subject to frequent new infections, treatment is preceded by 1-4 weeks "dehabituating" or cessation of quinine, unless fever of a threatening character comes on; and in view of the fact that manifest malaria is more responsive to quinine than latent malaria, an attempt was first made to bring the parasites into the circulation by one or other of the known methods. A method successful in 50 per cent. of the cases was an injection of 0.25 gm. of optochin. The quinine treatment is given synchronously with the activation methods.

MORGENROTH (J.). *Die Therapie der Malaria durch Chinaalkaloide und ihre theoretischen Grundlagen.* [The Treatment of Malaria with Cinchona Alkaloids and its Theoretical Basis.]—*Deut. Med. Woch.*, 1918.

Professor Morgenroth dissents from the commonly accepted view of Binz that quinine acts on the malaria parasite merely as a protoplasm poison. From the varying effects of different cinchona alkaloids on different micro-organisms, and even on the same micro-organism, he argues that quinine has a specific chemotherapeutic action. Experiments also by

several observers, whom he quotes, justify, he thinks, the influence that the degree of concentration obtained in the blood (namely, less than 1:20,000 a few minutes after intravenous injection, and 1:150,000 to 1:500,000 after introduction by the mouth) is far too low to act as a protoplasm poison.

He doubts that it is the small amount of quinine in the plasma that destroys the parasites, nor does he share the view that it is the quinine in the viscera; but from a series of careful and critically-devised experiments which are summarised below—he concludes that quinine is stored, or held, in the red blood cells, and that the prophylactic as well as the therapeutic effect of the drug is capable of explanation, as being due to the negative chemotaxy, or repulsion, exercised by the cinchonised red blood cells on the attacking parasites.

The technique of the first series of experiments cited rests on the fact that the cinchona alkaloids produce anaesthesia of the rabbits cornea when their solutions are brought in contact with the conjunctiva (MORGENROTH and GINSBERG, 1913).

To a 1:500 solution of optochin hydrochloride in 8.5 per cent. solution of cane sugar are added washed goat blood corpuscles so as to produce a 5 per cent. suspension. Centrifuge. Pour off the clear fluid (A) and shake the sediment in the small quantity of fluid which remains, so as to produce a thickish suspension of corpuscles (B). Now bathe one cornea of a rabbit for 3 minutes with A and the other cornea with B. A does not induce any definite anaesthesia, while after two minutes B makes the whole cornea completely anaesthetic, the full effect lasting for 20 minutes and then slowly disappearing.

In the case of the suspension of corpuscles the alkaloid concentrated thereon passes over to the cornea, a process which has been named by the author "transgression." The experiment may be made with quinine hydrochloride and the result is the same, but the anaesthetic effect is less: the author concludes that the results of all his optochin experiments hold good for quinine also. Experiments showed that human red corpuscles behave like those of the goat. It is concluded that the red corpuscles can store up quinine hydrochloride or optochin hydrochloride to a considerable extent, and give it up to other cells.

To see if these experiments hold good for concentrations such as occur in the blood *in vivo*, others were undertaken with defibrinated goat's blood, the biological test being employed.* When, under the same conditions, to (1) goat's serum and (2) goat's blood optochin was added so as to make a dilution of 1:100,000, the serum was promptly separated from (2), and the two serums further diluted to 1:200,000 and 1:400,000, it was found that the inhibitive effect on the growth of pneumococci was considerably greater in the case of the serum (1) than that of serum (2); the latter appeared to have lost about 50 per cent. of its optochin. To meet the objection that the deficiency could be explained by the drug being destroyed in the serum another series of experiments was made, depending on the fact that suspensions of the free bases of the cinchona alkaloids in salt solution exercise considerable hæmolytic action. If these suspensions are centrifuged it is found that the clear fluid does not contain enough alkaloid to produce hæmolysis. The inference is that the hæmolysis which takes place is attributable to the fixation of the alkaloid on the corpuscles.

From these three series of experiments it results that cinchona alkaloids are stored up in the red corpuscles

* The biological test depends on the fact that serum containing optochin in minute quantity (1:400,000–1:800,000) will prevent the growth of pneumococci in an otherwise suitable medium to which it is added. [See ALMROTH WRIGHT, *Lancet*, 1912, Dec.]

and that their holding in these depends on the holding in the surrounding serum and is constantly higher than this.

As regards the therapeutic and prophylactic action of the cinchona alkaloids in malaria, there are the following possibilities:—

(1) Ectocorpuscular sterilisation (a) by alkaloid dissolved in the blood plasma; (b) by transgression of the alkaloid stored in the blood corpuscles.

(2) Endocorpuscular sterilisation, by alkaloid stored in the red cells.

(3) Action by repulsion.

As regards (1) the possibility exists that free parasites in the immediate neighbourhood of the red corpuscles can take up larger quantities of the alkaloid than correspond to the holding of the plasma, the process being analogous to what happens in the rabbit cornea experiment. Endocorpuscular sterilisation (2) is by no means proved. In the consideration of (3) we come to the most interesting part of the paper. It is agreed that the merozoites have a very short period in which to enter the red corpuscles, failing which they become disintegrated in the plasma. It is a legitimate assumption that quinine, which Binz showed had a negative chemotactic action on leucocytes, has a corresponding action on the amœboid merozoites or sporozoites and, given the difference in the concentration between the red cells and the plasma, the parasite will be unable to penetrate into the red cell. It is barred out, and then destroyed or starved. This hypothesis, the author thinks, completely explains quinine prophylaxis, and is sufficient to explain quinine therapy. At any rate the repulsion theory and the fact that the red corpuscles store up quinine must henceforward be taken into consideration. The former gives the new point of view, that organotropy and parasitotropy are not opposed, but rather that, as far as the red cells are concerned, a heightened organotropy is, *ceteris paribus*, to be looked upon as therapeutically favourable. Cinchona alkaloids with a maximum affinity to the red cells, and a repulsion faculty greater than that of quinine would, if they could be obtained, be of great value in prophylaxis and the treatment of recent cases, and the author has little doubt that such can be found.

MEDICO-LEGAL NOTES OF INTEREST IN THE CHEMICAL EXAMINER'S REPORT OF BENGAL.

SENIOR Assistant Surgeon Hemnath Adhikari, B.A., M.B., who is responsible for the Medico-Legal Department, contributes the following notes on selected cases:—

HUMAN POISONING.

1. *Aconite as an arrow poison*.—The viscera of a Sepoy, 2nd Lakhimpur Battalion, Assam Military Police, were forwarded for analysis by the Commandant, 2nd Assam Rifles, Sadia (Lakhimpur), with the following history:—The dead body of the Sepoy was found with two arrows sticking at the back, at Nizamghat outpost, a place inhabited by aboriginal hill tribes. On *post-mortem* examination, one metallic arrow was found lying into the spleen substance, penetrating from the posterior border and pointing on its anterior border. One bamboo arrow was found between the liver and right kidney and one metallic arrow was found into the scalp at the site of the external head injury. The Medical Officer gave his opinion that death was due to hæmorrhage from puncture of spleen by penetration of arrow. But the Commandant wanted to know whether the arrows used were poisoned. The viscera with the arrows were submitted to chemical analysis and aconite was detected in them.

2. *Aconite in haria (country liquor).*—The Sub-Assistant Surgeon of Simdega, Ranchi, sent the viscera of one Prabhu Sahai alias Ghasi Uraon, who took his evening meal consisting of rice and *dāl* with a little *harial* (liquor prepared locally from rice). Three or four hours after, he complained of burning sensation in his stomach and throat and died on the following morning. Aconite was detected in the viscera.

A quantity of *harial* alleged to have been taken by the deceased was subsequently sent for analysis and aconite and alcohol were detected.

3. *Aconite and arsenic in pachai (fermented rice).*—The Sub-Assistant Surgeon, Rampurhat, Birbhum, sent the viscera of two persons, aged 28 and 33, respectively, with the history that both of them drank *pachai* liquor in the evening and came home, where they partook the same meal (consisting of rice, *dāl* and vegetables). Soon after both of them felt uneasy, became restless, vomited, purged, complained of very severe pain and died a few hours after. *Post-mortem* examination showed marked congestion of stomach, etc. Aconite, arsenic and alcohol were detected in the viscera of both the deceased.

4. *Antimony poisoning.*—The Commissioner of Police, Calcutta, forwarded some cocoa for analysis. The history of the case was that soon after taking the cocoa, all the members (adult and children) of a European family commenced vomiting and purging. The illness lasted for about 4 hours, after which all of them recovered. Antimony was detected in the cocoa. Antimony poisoning is so rare that this case would form an interesting record.

5. *Arsenic in a hanging case.*—The Assistant Surgeon, Tezpur (Assam), forwarded the viscera of one Mangal Napit with the history that his body was found with an oblique mark round the neck. *Post-mortem* examination revealed a continuous oblique mark of ligature round the neck, about $1\frac{1}{2}$ inch broad, white in appearance, placed between the chin and cricoid cartilage in front and the centre of the nape of the neck behind. On dissection, the subcutaneous cellular tissues were found condensed in several places, having a hard feel, lungs, larynx and trachea congested, right side of heart full and all the signs of asphyxia were present. The mucous membrane of stomach was congested in some places and the stomach contained undigested food. The Assistant Surgeon was of opinion that death was due to asphyxia, probably as a result of suicidal hanging, and the Civil Surgeon also concurred with his opinion. Arsenic was, however, detected in the viscera.

6. *Arsenic in a cremated body.*—The Civil Surgeon of Monghyr forwarded the ashes and remains of the dead body of one Musammatt Monothlia, who was said to have been poisoned by arsenic. The ashes, etc., were submitted to chemical analysis and arsenic was detected in them. Arsenic, being a volatile poison, is not found in the ashes of completely cremated bodies. In this case, partially cremated remains were sent for examination, with the result noted above.

7. *Copper sulphate poisoning (homicidal).*—The Sub-Assistant Surgeon, Goalpara, Assam, sent the viscera of one Guljar Mia and some clothing (sheet, *kantha*, rags, etc.) said to be soaked with the vomit of the deceased, for analysis. The history of the case was that Guljar Mia was ill and another man, who was said to be on intimate terms with his wife, gave him some powder as medicine, by taking which he began vomiting and died. Copper sulphate was detected in the stains of vomited matter on the clothes and copper salts in the viscera.

8. *Croton oil in well-poisoning.*—The Subdivisional Officer, Sadar, Rungpur, forwarded one rope with iron ring, some pasty substance wrapped in jack-fruit leaf, a piece of brick and a sack containing some earthy

substance with the history that all these articles were found in a well, the water of which tasted bitter and by drinking which a woman miscarried, several were attacked with diarrhoea and one actually died. Croton oil was detected in all the exhibits.

9. *Oleander poisoning (accidental).*—The Assistant Surgeon, Buxar (Shahabad), sent the viscera of a male child, aged 3 years. The history of the case is that the boy was found with a seed of Kanjar (Yellow Oleander) on 1st January 1918, at about 8 A. M. After that he vomited and was taken to Dumraon Hospital, where his stomach was washed out and he died subsequently. The washings of the stomach were also sent for chemical examination. Oleander was detected both in the viscera and the stomach wash.

10. *Strychnine poisoning due to wrong dispensing.*—The Subdivisional Magistrate of Alipore, 24 Parganas, forwarded the stomach washing and some powder alleged to be medicine for rheumatism prescribed by a doctor and purchased from a respectable druggist's shop. As soon as one dose of the medicine was administered to a female, she developed symptoms of poisoning. Immediately her stomach was washed and she recovered. The medicine prescribed consisted of aspirin, caffeine citras and phenacetin. Strychnine was detected in the stomach as well as in the powders in addition to the prescribed medicines.

11. *Datura poisoning (fatal).*—The Teacher of Medical Jurisprudence, Campbell Medical Hospital and School, Sealdah, forwarded the viscera of one Audh Bihari Kurmi, whose dead body was found inside the ashpit of down line at Naihati (E. B. Ry.). *Post-mortem* examination revealed the following: Lungs, liver, kidneys congested; right chambers of heart had fluid blood; meninges and brain somewhat congested; stomach contained some watery fluid with ash in it; the intestines were found congested and containing glairy mucoid, bloody, fluid, yellowish faeces. The Medical Officer, who held the *post-mortem* examination, was of opinion that death was due to asphyxia, some deliriant or narcotic (*datura*, alcohol, opium, etc.) might possibly have been the cause or a factor. Atropine was detected in the viscera of the deceased.

12. *Datura poisoning to facilitate theft.*—(a) The Commissioner of Police, Calcutta, sent the stomach washings of one Roghunandan Kurmbi, a cooly, who was given on 10th January, 1918, at 7 P. M., by one unknown person, some *pān* (prepared betel) in Juggernath Ghat, after eating which he became unconscious and was robbed of two gold ear-rings. He was subsequently found in Harrison Road and removed to the Campbell Hospital, Sealdah. Atropine was detected in the stomach wash.

(b) The same officer forwarded the stomach washings of Sini Warsaroo, who, on 16th January, 1918, after return from Ganga Sagar Mela was sitting at Juggernath Ghat, when a man named Rambrij Tewari offered him some *pooris* and vegetables to eat, which he did and half an hour after he became giddy, when Rambrij took out from Sini's person a purse containing five rupees. Sini caught hold of the man and made him over to the Police who removed Sini to the Mayo Hospital, where his stomach was washed out and he recovered. Atropine was detected in the stomach wash.

(c) The same officer sent a quantity of sweetmeat with the history that at about 9 P. M., on 27th February, 1918, an unknown Bengali visited a public woman at her house with a pint bottle containing country liquor and the food mentioned above. The woman took a quantity of the liquor and some sweetmeat. On the latter tasting bitter she threw it away on the floor. After a while she became restless and unconscious and on the following morning found that her ornaments

were missing from her person. Atropine was detected in the *pooris*, *kachuris*, etc.

ANIMAL POISONING.

1. *Aconite as animal poison*.—The Veterinary Assistant of Singbhum sent the viscera of a horse which was suspected to have been killed by poison. Aconite was detected in the viscera of the horse.

2. *Oleander as cattle poison*.—The Subdivisional Officer, Sewan (Saran) sent a piece of rag which was found in the dung of a bullock said to have been poisoned. The rag bore some blood marks and was covered with a reddish brown deposit. Oleander was detected in the exhibit.

THE following list of candidates passed the examination of London School of Tropical Medicine at the termination of the 59th Session (January–April, 1919):—

SOROUR, M. F.	} With distinction.
SMYLY, H. J.	
SEELLY, E. ST. J.	
LEEMBRUGGEN, H. U.	
KYLE, V. B.	
BOSTICK, J. B.	

SIR CLIFFORD ALLBUTT.

WE have much pleasure in publishing the following letter, which explains itself. Sir Clifford Allbutt deserves well of the members of the Indian Medical Service for the yeoman service he has rendered them in connection with the recent deputations to the Secretary of State for India of which he was the head. Full accounts of the proceedings of these deputations have already been published in the *Indian Medical Gazette* and it will be within the memory of all how splendidly Sir Clifford Allbutt put forward the views of the British Medical Association on the different questions at issue regarding the pay, pensions and prospects of the officers of the Indian Medical Service.

PORTRAIT OF SIR CLIFFORD ALLBUTT.

SIR—Sir Clifford Allbutt has accepted an invitation to allow the profession to present to him a portrait of himself painted by an eminent artist. The Council of the British Medical Association has taken the initiative in the matter because Sir Clifford Allbutt has been President of the Association during the years of the of the war, and will preside over its Annual Meeting in Cambridge next year. The esteem due to Sir Clifford Allbutt's attainments and the warm affection inspired by his character are such that very many, both within and without the Association, will desire to share in this tribute to one whose career has reflected so much honour on medicine in England. This desire will not be limited to his many pupils, first in Leeds and afterwards in Cambridge, nor to the grateful members of the Association over which he has presided during the past five years.

Subscriptions are invited from all members of the profession. The amount is limited to one guinea, and the Treasurer of the British Medical Association, 429, Strand, London, W.C.2, is now prepared to receive subscriptions of one guinea or less. Cheques and postal orders should be made payable to the "Sir Clifford Allbutt Presentation Fund," and crossed

London County, Westminster, and Parr's Bank.—We are, etc.,

J. A. MACDONALD,
Chairman of Council.

T. W. H. GARSTANG,
Chairman of Representative Meeting.

G. E. HASLIP,
Treasurer.

British Medical Association, 429, Strand, W. C.

THE SIR WALTER BUCHANAN FUND.

WE have pleasure in acknowledging the following subscriptions to the above fund:—

Col. C. R. M. Green, I.M.S.	...	Rs. 200
Lt.-Col. R. E. Turner, I.M.S.	...	Rs. 150
Lt.-Col. I. W. Cornwall, I.M.S.	...	Rs. 100
Lt.-Col. F. P. Maynard, I.M.S. (Retd.)	...	Rs. 100
Major H. H. Thornely, I.M.S.	...	Rs. 100
Major C. E. Palmer, I.M.S.	...	Rs. 50

The subscriptions already promised reach nearly one-third of the amount we desire to collect.

Reviews.

Essentials of Medical Electricity.—By ELKIN P. CUMBERBATCH, M.A., B.M., B.Ch. (Oxon.), M.R.C.P., in charge of the Electrical Department, St. Bartholomew's Hospital, etc. Fourth Edition. London: Henry Kimpton, 1919. pp. 368. 7s. 6d.

WHILE by no means pretending to be a complete exposition of the subject, this little volume comprises in its pages all the student and general practitioner need know about medical electricity. The style is lucid and the description of apparatus clear and abundantly illustrated by diagrams and photographs.

The present edition has been thoroughly revised and brought up to date. Many parts have been re-written, particularly the chapter on the electrical testing of muscles and nerves, which now includes an account of physiological and pathological principles underlying the subject. The use of condensers in testing, with the advantages and drawbacks of the method, is also fully dealt with.

The chapter on diathermy has been revised in the light of recent experience and forms fascinating reading to the student of medicine.

New instruments and some recent modifications of old ones, such as the Tripier Coil, the water rheostat, and the latest pattern of high frequency apparatus are described.

No pains appear to have been spared to bring the volume up to date and, if one may offer a criticism, it would be to suggest that the chapter on physical principles be placed at the beginning and not at the end of the book.

Elements of Surgical Diagnosis—By Sir ALFRED PEARCE GOULD, K.C.V.O., M.S. (Lond.), F.R.C.S. (Eng.), Fifth Edition with 16 Radiographic Plates: Cassell & Co., Ltd., 1919.

SINCE its first appearance in 1884 this most valuable little book has run through five editions and several reprints. This new edition has been brought thoroughly up to date by the exclusion of older methods of diagnosis that have been rendered obsolete by the extended uses of X-ray and of laboratory processes: new and improved methods, on the other hand, have been introduced and described clearly and concisely. The volume is primarily intended for students, but we have no compunction in stating that many men in actual practice will find within its pages great assistance in diagnosis. Just as the book came in we found many useful points within a few pages on the differential diagnosis of cancer of the breast.

We are very strongly of the opinion that this new edition will be as great a favourite with the medical profession—students and practitioners—as the previous edition, and we can thoroughly recommend it to the careful attention of both.

The plates are a distinct advantage and illustrate the conditions described in a most excellent manner.

Le Cholera.—Par H. VIOLE de l'Institut Pasteur. Préface de E. ROUX, Directeur de l'Institut Pasteur. Illustré de 100 figures. Paris: Masson et Cie, 1919. Prix 20 francs (+ 10% majoration temporaire).

THIS comprehensive treatise on cholera should be on the shelves of all who can read French, for it is written in the clear style characteristic of our Gallic allies.

What concern us most are the opinions of the author as to diagnosis and treatment. From his position in the Pasteur Institute he is well-qualified to speak of the bacteriology, and from his experience in Indo-China, China, Japan and Egypt he is competent to deal with the semeiology and the therapeutics of this disease, which may soon again become epidemic in Europe, and may, in the course of time, become so modified as to remain endemic in certain regions there.

The rapid methods of orientation employed by certain observers are entirely to be deprecated, he considers: for if their result be negative, further investigation must be done, and if it be positive, it requires confirmation. Thus they do not save time, as their users profess to believe. Whenever there is reason to suspect that a case of cholera has occurred, the bacteriologist should carry out a complete investigation, by cultivating the vibrios which he may find in the digestions in

peptone water, Dieudonné's medium (potassic blood-gelatine)* Violle's medium (sodic glycerine-gelatine), † etc., and testing the resulting culture with an anti-choleraic serum, for agglutination and also for complement fixation, against a standard strain of the vibrio.

The treatment of the case should be carried out by injections of hypertonic saline solution on the lines laid down by Rogers: for with an isotonic solution there is a marked tendency to renewed collapse after apparent amelioration of the symptoms has taken place. Where aneuria is present Rogers' alkaline solution should be used. With it Rosenthal obtained excellent results in the late Balkan war.

If anti-choleraic horse serum be available, it may be given in doses of 50 c.c. to 100 c.c., intravenously if possible.

As to the prophylaxis we are glad to see that compulsory vaccination of troops is recommended.

The author treats those who profess the cult of the conscientious-objector and the inviolability of the individual with fine scorn. It is very gratifying to find the work of Haffkine, Greig and Rogers praised so highly by so competent an authority.

Aids to Histology.—By A. GOODALL, M.D., F.R.C.P., (Edin.) Second Edition. Messrs. Baillière, Tindall and Cox, 1919. Price 3s.

THE first edition of this little volume was published in 1911. It is an attempt to present the essential facts of histology in a small compass and at the same time act as a guide to the junior student. That it has met a needed want is evident from the fact that a second edition has been found necessary. It gives the essential features in a compact and readily understood manner and saves the junior student from the bewilderment that would probably befall him if he relied exclusively on some of the larger text-books on histology.

It is by no means a simple cram book but gives clear accounts of the different structures in moderately technical language. Some parts, such as the central nervous system, are treated fairly fully and should provide the student with all that it is essential to remember.

The little book is well printed and the illustrations are all that could be desired.

* Dieudonné (modified): Equal parts of bullock's blood and normal (60%) solution of potash. Half an hour at 100°C in the autoclave. Mix with neutral nutritive gelatine of 3 per cent. strength, duly sterilised—7 parts to 3 parts of potash-blood. The strength of the gelatine is then 2 per cent.
† Violle: Neutral nutritive gelatine 2 per cent. strength, and containing 0.5 per cent. NaCl ... 100 g.
Glycerine ... 10
NaCl ... 1
Normal solution of soda (40%) in distilled water ... 2

Immune Sera.—A concise exposition of our present knowledge of Infection and Immunity. By CHARLES F. BOLDAUN, M.D., and JOHN KOOPMAN, B.S., Department of Health, City of New York. Fifth Edition, thoroughly revised. John Wiley and Sons, New York; Chapman and Hall, London, 1917. Price 7s.

THIS valuable little book has been very favourably received by the profession, and this has entailed the production of five editions since its first publication in 1904.

It is divided into twelve chapters and within these practically everything connected with immunity is dealt with. Thus there are separate chapters on infection and immunity, antitoxins, agglutinins, the Wassermann reaction, precipitins, cytotoxins, opsonins, snake venoms and their antisera, anaphylaxis, bacterial vaccines, leucocytic extracts in the treatment of infections, and Chapter XII deals with other reactions, the meiostagmin reaction, the Much-Holzmann cobra venom reaction, Weil's cobra venom test in syphilis, and antitrypsin determinations.

As a short concise exposition of the subject we can thoroughly recommend this book to both students and practitioners. It gives all the really essentials and is a most readable and interesting publication.

The publishers have done their part well and the paper and printing are all that could be desired.

Correspondence.

"THE EFFICACY OF QUININE IN MALARIA."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—During the recent Science Congress in Bombay, the discussion on malaria showed that a certain proportion of medical men (and not a negligible one) had lost faith in the efficacy of quinine both as a prophylactic and as a curative agent. The discussion arose from an address on this subject by General Hehir, who, from statistics recently obtained by him, drew conclusions favouring the systematic use of the drug. Unfortunately time did not permit of his giving figures to confirm his views, or the remarks subsequently made might have been modified somewhat. Apparently the opinions of Sir Patrick Manson and other eminent authorities did not carry any weight with some of the speakers and it is therefore doubtful if the evidence of small fry will be regarded at all. I will nevertheless venture to give but one fact which came to my notice during the last malaria season (June to October) in this station and if it can be explained satisfactorily on any other ground but the efficacy of quinine, I am open to conviction. The fact is as follows:—

During the first five months of the year (non-malarial season), cases of malaria (almost entirely imported) occurred. A careful observation was kept on all these in the malaria season, during the whole period of which a daily prophylactic dose of quinine (gr. v) was being given, and at the end of the year it was found that not a single relapse had occurred amongst the cases. The conclusion from this may be, either that the infection was cured by previous treatment or that the daily dosage proved efficient in preventing a relapse. Either of these deductions, if granted, upsets the opinion that quinine is useless prophylactically or curatively. Personally I am of opinion that continuative treatment after the last attack had the curative action, but as the total incidence of malaria in the garrison was low, the prophylactic doses may have had some effect. Only one other condition, mentioned by one speaker, would have some bearing on the cure and that is as regards food. This undoubtedly is an important factor, but considering the fact that the rations and pay enable the sepoy

to feed himself well at all times and that he seldom does otherwise now-a-days, I think this can not be regarded as contributing markedly to cure; unless it be that the diet is regulated (often reduced at first), when its significance is changed from the nutritive point of view to one bearing on more effective digestion and elimination. This brings me to the question of treatment, which cannot be efficiently carried out unless we first ascertain the pathological effect of the disease and the full physiological action of the drug in question. In my opinion both the disease and the drug prevent the proper evacuation of bile by inspissating it, thereby producing a congestive condition reflecting on the portal system and efficient absorption from the alimentary tract. The drug may therefore be excreted and a wrong conclusion regarding its efficacy be formed thereby. That this opinion is not an isolated one will be seen from a reference to "Memorandum on some Medical Diseases in the Mediterranean War Area, 1917 (Reprint)," wherein, referring to the treatment of this disease, we find the following: "This spells quinine but the latter will often fail unless the liver is first of all put in good working order." This I believe to be the secret of success and one that has fully convinced me from years of experience that quinine, administered under favourable conditions, is an absolute specific for the disease.

General Hehir in a subsequent address to the Congress remarked that, although the treatment by this drug had been carried out for some years, the failure of the medical faculty to form any definite opinion on its utility, or futility, or to formulate any specific method of administration did not reflect creditably on them. To remove this stigma as far as lies in my power, and because of the importance of the subject, I have written the above and trust that you will find space for its insertion in your gazette.

Yours, etc.,
J. McDONALD.
Lieut.-Colonel, I. M. S.

ABBOTTABAD:
23rd April, 1919.

"YAWS IN INDIA."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—With reference to the remarks in the May issue of the gazette that "indigenous yaws is unknown in India," the following may be of use:—

(1) Dr. A. Powell in his article on "An Epidemic of Yaws" in the *Indian Medical Gazette* of September, 1894, described cases met with in Assam and remarked: "That it was not described ere that in British India. It is said to have occurred in Pondicherry." He referred to the inter-communication between Madras and Ceylon, where the disease was common.

His enquiries last month show that the disease is still met with in Assam.

(2) Cases of yaws are being met with in the Vizagapatam District, Madras Presidency, and an enquiry in 1910 by Dr. T. S. S. Reddy, F.R.C.S., showed that the disease was yaws. It is prevalent in the Godavery agency according to the statement of a medical friend who was working there till six months ago. It may be remarked that the investigating officer met with some 94 cases in 80 villages of a population of 6,158.

(3) In a book printed at the Modern Printing Works, Madras, for private circulation—said to be Col. Niblock's Notes—the following occurs on page 92:—"Geographical distribution of yaws:— . . . Also met with in this country though rare. Occasionally found in Travancore and West coast. An epidemic occurred in Assam in 1894."

(4) In the report on the Sanitary Administration of Burma for the year 1915 it is stated as follows, on page 16: "Yaws:—This is referred to in the reports as being prevalent in the Lower Chindwin and Mergui districts, but no fresh information on the subject is supplied. It is also said to occur in the parts of Pakoko district bordering the Lower Chindwin district and in the village of Kundaw, Pakoko township. A few cases of yaws attended the Civil Hospital, Kyaukse, for treatment from neighbouring villages."

There are thus evidences to show that cases of yaws probably indigenous are being met with in this country. The subject is important enough and requires investigation, with a view to prevention.

Yours, etc.,
N. S. NARASIMHAN, L.R.C.P.S. (Bom.).
BOMBAY:
21st May, 1919.

CARBOLIC ACID GARGLES IN DIPHTHERIA.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—Mrs. C., on her way Home from Calcutta, consulted me on 9th March, 1919, for her right ear, having suffered from

pain and deafness for some two or three months. An examination revealed a growth of *aspergillus niger* in her right ear, about the size of a big pea, which was removed by syringing and peroxide of hydrogen. Simultaneous examination of the nose and throat showed an acute congestion of the fauces, tonsils and pharynx. On being questioned whether she had any soreness, she said none that she knew of. Next day she had fever 102°F. with swelling of the fauces and tonsils, the latter being covered over by membrane. Glands at the angles of both jaws were enlarged and tender. She said she was unwell since the morning, and attributed the condition of her throat, soreness and inability to swallow, to bad smell from some neighbouring drains next to her bed-room, where she had slept the night previous.

A provisional diagnosis of diphtheria was made and the patient was isolated, asked to remain in bed, take liquid nourishment, and gargle with 1 per cent. carbolic lotion. A smear taken and examined immediately did not show any *B. diphtheria*. Another swab sent to Parel Laboratory showed diphtheria. On receipt of 8000 units of this report, the next day, an injection of 8000 units of diphtheria antitoxin was made into the right flank, temperature 100°F., the fauces clear of membrane which had come away, as the patient said, the previous evening by the vigorous use of the 1 per cent. carbolic lotion. Next day the temperature came down and the recovery was uneventful, and she was able to sail away on the eighth day, as she had already booked her passage. My object in describing this case is to point out the good and speedy effect of the carbolic lotion on the duration and course of the illness. The husband, who had been in contact from the third day, also used the lotion for gargles as well as a hand-wash.

Yours, etc.,

F. D. BANA, M.R.C.S., D.P.H., D.T.M. & H.

"IODINE IN CHOLERA."

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—Some years ago, I think probably from a letter in your journal, I noted the treatment of cholera by the methods described by one Dr. Bracho. He gave three methods of treating such cases and they were described as under. The last one was said to be most efficacious.

- (1) R
Tinct. iodi ... m x
Acid sulphuric dil. ... m x
Tinct. digitalis ... m.x
Aqua, ad. ... 3 i
One ounce every four hours.
- (2) R
Iodum ... gr. 4
Ext. gent. ... q.s.
Fiat pill one.
One pill three or four times a day.
- (3) Intra-peritoneal injection :
R
Iodum ... gr. 4
Pot. iodid. ... gr. 4
Aqua destillata ... m.xx

Twenty minims constitute one complete treatment for an adult. The injection is directed to be made in the region of the caecum. Adrenaline is also given freely by mouth.

I mention these treatments as I happened to try the first method during the recent cholera epidemic and found it efficacious. I only added spt. camphor, mucilage and tinct. cinnamomi to the mixture, as the first drug allays spasms well and is also, I think, partly curative. I did not try the last method, as I was afraid to do so, thinking it would perhaps cause some peritoneal adhesions.

The usual treatment by pot. permanganas tablets and intravenous saline is quite good, but unfortunately the tablets—apart from their high cost—are sometimes not considered by some patients as sufficient treatment without a mixture, and less tablets with the iodine mixture is found equally good. The saline is objected to by many patients on account of the aversion to injections, and also the difficulty in having to treat single-handed several cases at various places.

The advantages, I think, in the iodine mixture method combined with the tablets are: (1) vomiting is early stopped, (2) there is a less tendency to retention of urine, (3) the drugs constituting the mixture are cheap. With this mode of treatment the tablets could be given every half hour instead of every fifteen minutes. The only disadvantage I found was that the patients complained of much burning in the stomach, due, I presume, to the large dose of iodine.

About the intra-peritoneal method, some of your readers may be able to advise on the matter. A less irritating preparation of iodine, viz. iodoal, is used in plague and is found efficacious. Perhaps this preparation or colloidal

iodine would be better for such injections, and would not I think, cause much peritoneal adhesions. To avoid any depressing action, pituitarin or adrenalino could also be given hypodermically.

BHIWANDI:
9th May, 1919.Yours, etc.,
J. F. HENRIQUES,
Asst.-Surgeon.

DIPHTHEROID INFECTION IN INFLUENZA.

To the Editor of THE INDIAN MEDICAL GAZETTE.

SIR,—During the late epidemic of influenza some cases of interest came to my notice, of which I send you a short account. They were all cases of a "diphtheroid" infection (as found by me bacteriologically), producing somewhat different effects. I use the expression "diphtheroid," for although morphologically and culturally identical with the Klebs-Löffler bacillus, they produced on the boiled white of egg a yellow growth within twenty-four hours (this being the only difference).

1. A Gurkha patient was convalescent from influenza when he was supposed to have contracted "frost-bite." Dry gangrene of the right leg to the middle of the thigh developed as a consequence of thrombosis of the femoral artery. On the limb being amputated above the line of demarcation, I removed a portion of the thrombus and obtained from it a pure cultivation of the "diphtheroid"—apparently the cause, though a very rare one. In this case there were no general symptoms beyond a rapid, soft pulse and subnormal temperature.

2. A Gurkha patient developed catarrhal pneumonia in both lungs, the sputum showing a mixed infection. Consequent on this he got pleurisy on the left side. The effusion, at first slightly opalescent, became, as seen from later evacuation, cherry red and then purulent. From the last named a pure "diphtheroid" was cultivated. The patient recovered so far after the third evacuation as to be convalescent and able to move about. After eight weeks of convalescence he had a relapse, the effusion on this occasion being on the right side. This also showed the "diphtheroid." Treatment by "anti-diphtheritic serum" was recommended but not tried, and death occurred in forty-eight hours. Cultivation from the exudation from lung showed once more the presence of the "diphtheroid."

3. A Gurkha patient.—The sputum varied in character from the ordinary influenzal cases, in that, instead of being expectorated in large muco-purulent masses, the sputum was more homogeneous, of thinner consistence, and of a greyish white colour. Microscopic examination of this revealed the presence of large clumps of the diphtheroid and a pure cultivation was easily obtained. Treatment by "anti-diphtheritic serum" was recommended in this case too but was not adopted. The patient died within twenty-four hours of the discovery of these.

4. A British patient.—This case was identical with case No. 2 recorded above, with the following differences:—(a) After his relapse, fluid of a cherry red colour was evacuated three times in a fortnight owing to rapid refilling and respiratory trouble, and there was a rapid decline in health. At my suggestion "anti-diphtheritic serum" was then tried, with most excellent results. There was no further effusion, the patient himself, even after the first injection, expressed a feeling of relief, and after further injections his whole condition rapidly improved and he recovered as far as could be expected.

Remarks:

1. The presence of "diphtheroids" in pleuritic effusions I believe is rare.
2. The pneumococcus and pneumobacillus were present, but in almost negligible quantities.
3. It is not possible to say exactly what part, if any, this germ played in the production of the various clinical symptoms, but the results of anti-diphtheritic treatment in case 4 justify the conclusion that it was a potent factor in that case, at least, and probably in case No. 2.

Yours, etc.,
J. McDONALD,
Lieut.-Colonel, I.M.S.

ABBOTTAABAD.

THERAPEUTIC NOTICE.

BURROUGHS, WELLCOME & CO.'S EXHIBIT

at the Meeting of the British Medical Association, London, 1919.

THE keynote of Burroughs, Wellcome & Co.'s display is "Replacement of Enemy Monopolies by All-British Products." From the fact that nearly twenty years ago Burroughs Wellcome & Co. were manufacturing Pilocarpine and its salts, and at a little later date atropine, eserine,

nematropine and their salts, it is obvious that this firm did not wait for the stimulus of hostilities to commence their attack on German monopoly, and their pre-war production of the arylarsonate 'Soamin' made easier their notable achievement in the production of 'Kharsivan' and 'Neokharsivan,' which replaced German Salvarsan and Neosalvarsan at so early a date after the outbreak of war as to mitigate in a large degree the inconvenience caused by the cessation of supplies of these products.

Aspirin, salicylic acid, sodium salicylate, hexamine (replacing Urotropine), phenacetin, acetanilide, sodium glycerophosphate, benzamine salts (replacing B-eucaine salts), halazone, 'Tolamine' (Choloramine T), adrenalin, emetine, emetine bismuthous iodide, emetine hydrochloride, 'Epinine', 'Nizin' and 'Ernutin' (synthetic ergot), amongst other products exhibited, are examples of Burroughs, Wellcome & Co.'s activities directed to the acquisition and maintenance of British predominance in the fine chemical industry. The firm's avowed object is to excel, not merely to equal products of alien origin.

A variety of vaccines and sera are exhibited—products of the Wellcome Physiological Research Laboratories—a noteworthy feature amongst them being "Influenza Vaccine" and "Influenza Vaccine Mixed." The former is indicated in cases where the presence of the *Bacillus influenza* has been demonstrated, and for the mixed vaccine it is claimed that some immunity is developed against organisms producing pulmonary complications.

'Laxamel' is not a new product of the firm, but one that has increased in favour as a means of administering 'Paroleine' in other than its original form. In the guise of a palatable, jelly-like confection containing about 8 per cent. 'Paroleine,' 'Laxamel,' is readily taken by those who cannot tolerate the liquid.

The 'Hypoloid' products—hermetically-sealed glass containers of sterilised solutions presenting 'Adrenalin,' 'Digitalin,' 'Epicaine,' 'Infundin,' 'Strophanthin,' etc., are most convenient for instant hypodermic medication.

Members of the profession who are personally interested in the question of analysis will find a variety of 'Soloid' Brand Analysis Cases displayed—compact and portable outfits with all necessary apparatus and reagents for the examination of water, sewage, urine, etc. Blood test and bacteriological cases are also here. The 'Tabloid' Brand Medical Equipments range in shape and size from pocket cases to comprehensive outfits designed for the physician's carriage or motor. To be noted, too, are the 'Tabloid' Hypodermic and Ophthalmic Cases and products.

Messrs. Burroughs, Wellcome & Co.'s exhibit is a demonstration that despite war-time restrictions on development they have succeeded in enhancing their reputation for originality, accuracy and reliability.

Service Notes.

OBITUARY.

DEPUTY SURGEON-GENERAL SAMUEL JARDINE WYNDOWE, Madras Medical Service (retired), one of the few remaining Mutiny veterans died at Uley, Gloucestershire, on March 19th, aged 89. He was the son of the late Captain Wyndowe, born in 1830, was educated at St. George's Hospital, where he was dresser to Frank Buckland, and took the diploma of M.R.C.S. in 1854, and the degree of M.D., King's College, Aberdeen, in 1860. He entered the I.M.S. as Assistant Surgeon on March 24th, 1854, became Surgeon on March 24th, 1866, Surgeon-Major on July 1st, 1873, and Brigade-Surgeon, when that rank was first instituted on November 27th, 1879, retiring with an honorary step on June 15th, 1881. The year after he went to India he was appointed to a cavalry regiment of the Nagpur Irregular Force; in 1860 he was posted to Civil employment in the Central Provinces, and soon after was appointed Professor of Chemistry in the Madras Medical College, and Chemical Examiner to the Government of Madras. In August, 1867, he was given the Residency Surgeoncy of Haidarabad, and held that post till his retirement. He served in the Indian Mutiny from 1857 to 1859, took part in the engagement at Sambulpur, and received the Mutiny medal.

COLONEL ARTHUR OWEN EVANS, Indian Medical Service (retired), died at Lyndhurst, Hampshire, on February 22nd, aged 59. He was born on July 30th, 1859, educated at St. George's Hospital, and took the diplomas of M.R.C.S. in 1880 and L.R.C.P., Lond., in 1881. After acting as house-surgeon of Dewsbury Hospital, he entered the I.M.S. as surgeon on March 31st, 1883. After four years' military duty he was posted to civil employ in Burma, where he was for many years Civil Surgeon of Moulmein, and after his promotion to administrative rank, Inspector-General of Civil

Hospitals. He served in the Burma war in 1885-7, and received the medal.

TO BE BREVET MAJOR.

CAPTAIN R. F. D. MACGREGOR, M.C., M.B., Indian Medical Service; Captain J. Scott, D.S.O., M.B., Indian Medical Service.

INDIAN MEDICAL SERVICE.

SUBJECT to His Majesty's approval, Captain Claude Wells Woolloton Baxter, M.C., has been permitted to resign the service with effect from the 20th April, 1919.

SUBJECT to His Majesty's approval, Lieutenant Dattatraya Mangesh Moolky is permitted to resign his temporary commission, with effect from the 11th April, 1919.

SUBJECT to His Majesty's approval, Lieutenant-Colonel Thomas William Stewart is permitted to retire from the service, with effect from the 1st May, 1919.

THE promotion to his present rank of Major (Brevet Lieutenant-Colonel) Robert Macpherson Barron, D.S.O., I.M.S., is antedated from the 29th January, 1914, to the 29th July, 1913, but without pay.

COLONEL HORMASJEE EDULJEE BANATVALA, C.S.I., K.H.S., was retained in the service from the 2nd to the 22nd April, 1919, and was during this period, borne as supernumerary in his rank and grade.

SUBJECT to His Majesty's approval, honorary temporary Lieutenant Maharaj Krishna Kapur to be honorary temporary Captain, with effect from the 5th February 1919.

EAST INDIAN RAILWAY VOLUNTEER RIFLES.

SURGEON-LIEUTENANT-COLONEL EDWIN HAROLD BROWN, M.D., M.R.C.P., resigns his commission. Dated 31st March, 1917.

MAJOR-GENERAL G. G. GIFFARD, C.S.I., Indian Medical Service, is appointed Honorary Surgeon to H. M., the King, *vice* Surgeon-General T. Grainger, C.B., M.B., I.M.S.

To be C. B. E. ... Lt.-Col. W. B. Lane, C.I.E., I.M.S.
" O. B. E. ... Capt. R. A. Chambers, M.B., I.M.S.
Capt. I. I. H. Nelson, M.C., M.D., F.R.C.S., I.M.S.

To be Brevet Col. ... Major and Bt. Lt.-Col. C. M. Goodbody, C.I.E., D.S.O., I.M.S.

" " Lt.-Col. Major T. S. F. Paterson, D.S.O., M.B., I.M.S.
Major E. A. Roberts, D.S.O., I.M.S.

To be C. I. E. ... Lt.-Col. P. F. Chapman, M.B., I.M.S.
" I. D. Graham, I.M.S.
" W. H. Hamilton, D.S.O., F.R.C.S., I.M.S.
Lt.-Col. C. A. Sprawson, M.D., I.M.S.

INDIAN MEDICAL SERVICE.

SUBJECT to His Majesty's approval, Lieutenant-Colonel John Fisher, D.S.O., M.B., has been permitted by the Right Hon'ble the Secretary of State for India to retire from the service, with effect from the 25th March, 1919.

SUBJECT to His Majesty's approval, Colonel Hormasjee Eduljee Banatvala, C.S.I., K.H.S., is permitted to retire from the service, with effect from the 23rd April, 1919.

THE services of Majors J. E. Clements, I.M.S., Superintendent, Central Jail, Lucknow, and A. W. Overbeck-Wright, I.M.S., Superintendent, Lunatic Asylum, Agra, are placed at the disposal of the Government of India. Army Department, from the dates they relinquish charge of their duties.

THE undermentioned officers are granted, subject to His Majesty's approval, the acting rank of Lieutenant Colonel while commanding the Medical units mentioned against their names, from the dates specified:—

Major Francis Hugh Stewart, M.B., No. 13 Cavalry Brigade, Combined Field Ambulance, from 26th January, 1919.

Major Samuel Herbert Lee Abbott, M.B., No. 14 Cavalry Brigade, Combined Field Ambulance, from 27th May, 1918.

Captain Alexander Glover Coullie, M.B., F.R.C.S.E., No. 124 Indian Combined Field Ambulance (now No. 15 Cavalry Brigade, Combined Field Ambulances), from 15th April, 1918.

Captain James Burne Lapsley, M.B., M.C., No. 3 Combined Field Ambulance, from 4th November 1917 to 7th December, 1917.

LIEUTENANT-COLONEL J. G. P. MURRAY, I.M.S., made over charge of the Ranchi Jail to Lieutenant-Colonel J. C. S. Vaughan, I.M.S., in the forenoon of the 21st April, 1919.

CIVIL Assistant Surgeon Ali Ahmad made over the Medical charge of the Bhagalpur Central Jail to Major W. Gillitt, C.I.E., M.D., D.P.H., I.M.S., in the forenoon of the 6th May, 1919.

MR. E. B. ORRAH made over charge of the office of the Superintendent of the Bhagalpur Central Jail to Major W. Gillitt, C.I.E., M.D., D.P.H., I.M.S., in the forenoon of 6th May, 1919.

HIS Excellency the Governor in Council is pleased to appoint Lieutenant-Colonel G. McPherson, M.B., C.M. (Glas.), I.M.S., on return from military duty, to be Professor of Ophthalmic Medicine and Surgery, Grant Medical College, Ophthalmic Surgeon, C. J. Hospital, Bombay, *vice* Dr. G. B. Prabhakar, L.R.C.P. (Lond.), L.F.P.S. (Glas.), L.M. & S.

HIS Excellency the Governor in Council is pleased to appoint Dr. R. D. Chinoy, M.B., to be Honorary Assistant Physician, J. J. Hospital, *vice* Dr. A. J. Noronha, M.D., for a period up to 30th April, 1920.

LIEUTENANT-COLONEL T. JACKSON, M.B., B.Ch., I.M.S., is granted, from the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough on medical certificate for such period as may bring the combined period of absence to six months.

MAJOR W. LAPSLEY, I.M.S., to hold charge of the office of Deputy Sanitary Commissioner, IV range, from the forenoon of the 20th March, 1919, to the forenoon of the 22nd March, 1919.

DR. D. D. PANDYA, Deputy Sanitary Commissioner, I range, to hold charge of the IV range, in addition to his own duties, from the forenoon of the 22nd March, 1919.

MAJOR C. L. DUNN, I.M.S., whose services have been replaced at the disposal of this Government by the Government of India, to Deputy Sanitary Commissioner, II range.

THE following appointment is made with effect from the date specified :—

MAJOR (BT. LIEUTENANT-COLONEL) C. A. GILL, I.M.S., to be Chief Malaria Medical Officer, Punjab, with effect from 26th April 1919 (afternoon).

THE following transfer is made with effect from the date specified :—

Dr. A. E. MOORE, Civil Surgeon, Jhelum, transferred to Murree, with effect from 17th April, 1919 (forenoon).

INDIAN MEDICAL SERVICE.

THE following promotions are made, subject to His Majesty's approval :—

Temporary Lieutenants to be temporary Captains.

Richard Ronald Htoon Oo Tha, dated 13th March, 1917; Vasant Dinnath Madgavakar, M.B., dated 29th January, 1918; Khuda Baksh, Awan, M.B., dated 28th June, 1918; Durgadas Sanyal, M.B., dated 5th July, 1918; Mool Shing Bazaz, M.B., dated 9th July, 1918; Roshan Lal Khera, M.B., dated 11th July, 1918; Narayan Raghunath Shahane, M.B., dated 16th July, 1918; Ajit Kumar Sen, M.B., dated 31st July, 1918; Dwijendra Nath Bhaduri, dated 4th August, 1918; Harry Herbert Colwell, M.B., dated 11th February, 1919; Thakurdas Parmanand Vaswani, M.B., dated 15th February 1919; Vatackal Thomas Ninan, dated 16th February, 1919; Kunjuni Thirupod, dated 18th February, 1919; Govinda Sankaran Tampi, M.B., dated 22nd February, 1919; Gopal Gangadhar Limaye, M.B., dated 26th February, 1919.

MAJOR ARNOLD EGBERT GRISEWOOD, M.B., is granted, subject to His Majesty's approval, the acting rank of Lieutenant Colonel while holding command of an Indian Clearing Hospital, from 7th March, 1916 to 4th January, 1917.

THE following appointments, postings and transfers are made with effect from the date specified :—

Rai Sahib Gopal Das, 1st grade Assistant-Surgeon, in charge, Civil Hospital, Jhelum, Officiating Civil Surgeon, Jhelum, with effect from 9th April, 1919 (afternoon).

LIEUTENANT-COLONEL P. ST. C. MORE, I.M.S., Civil Surgeon, Sialkot. Civil Surgeon Dalhousie. With effect from 5th April, 1919 (afternoon).

THE services of Lieutenant-Colonel E. V. Hugo, C.M.G., M.D., F.R.C.S., I.M.S., are replaced at the disposal of the Government of the Punjab, with effect from the 13th March, 1919.

LIEUTENANT-COLONEL E. V. HUGO, C.M.G., M.D., F.R.C.S., I.M.S., is appointed to be Professor of Surgery, King Edward Medical College, and 1st Surgeon to the Mayo Hospital, Lahore, with effect from the 13th March, 1919.

MAJOR R. H. BOTT, M.B., F.R.C.S., I.M.S., is reappointed to be Professor of Operative Surgery, King Edward Medical College, and 2nd Surgeon to the Mayo Hospital, Lahore, with effect from the 13th March, 1919.

MAJOR H. H. BROOME, M.B., F.R.C.S., I.M.S., is reappointed to be Professor of Anatomy, King Edward Medical College, Lahore, with effect from the 13th March 1919, *vice* Lieutenant-Colonel J. C. Lamont, C.I.E., I.M.S. (retired), permitted to resign.

SUBJECT to His Majesty's approval, the services of temporary Lieutenant Jamshedji Darasha Shroff are dispensed with on account of ill-health, with effect from the 7th April, 1919.

SUBJECT to His Majesty's approval, temporary Captain Villapuram Rajaratna Nastesan, I. M. S. is permitted to resign his commission, with effect from the 11th April, 1919.

THE services of Major W. G. Hamilton, I.M.S., are replaced at the disposal of the Government of Bengal, with effect from the date on which he is relieved of his Military duties.

THE services of Lieutenant-Colonel J. M. Woolley, M.D., I.M.S., are placed at the disposal of the Government of the United Provinces, with effect from the date on which he is relieved of his Military duties.

ON return from Military duty, Major H. Watts, M.B., B.S. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), I.M.S., is posted to Raipur as Civil Surgeon.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Major H. Watts, M.B., B.S., M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon, Raipur, to the medical charge of the Raipur Central Jail, in addition to his own duties.

ON relief by Major H. Watts, M.B., B.S., M.R.C.S., L.R.C.P., I.M.S., Senior Grade Assistant Surgeon, Rai Sahib Bipin Bihari Gupta, L.M. & S., Provisional substantive Civil Surgeon, Raipur, is transferred to Drug as Civil Surgeon.

LIEUTENANT-COLONEL R. G. TURNER, I.M.S., officiating Inspector-General of Prisons, United Provinces, on being relieved, reverted as Civil Surgeon, Fyzabad.

HIS Excellency the Governor in Council is pleased to make the following appointments, pending further orders :—

MAJOR C. C. MURISON, F.R.C.S.E., D.P.H. (Edin. and Glas.), D.T.M. (Liverpool), I.M.S., to be substantive *pro tem* Civil Surgeon, Belgium, with effect from the afternoon of the 19th March, 1919.

MAJOR L. P. STEPHEN, M.B., B.Ch. (Abern.), F.R.C.S.E., D.P.H. (Lond.), D.T.M. & H. (Cantab.), I.M.S., to act as Civil Surgeon, Karachi, and Civil Administrative Medical Officer, Sind, in addition to his Military duties, with effect from the afternoon of the 31st March, 1919.

HIS Excellency the Governor in Council is pleased to appoint Major A. F. Hamilton, M.B. (Lond.), F.R.C.S., I.M.S., to act as Physician in charge Bai Motlibai and Sir D. M. Petit Hospitals, and Professor of Midwifery, Grant Medical College, Bombay, *vice* Lieutenant-Colonel S. C. Evans, M.B., C.M. (Edin.), I.M.S., proceeding on leave pending further orders.

HIS Excellency the Governor in Council is pleased to appoint Lieutenant-Colonel R. M. Carter, C.B., F.R.C.S., D.T.M. (Liverpool), I.M.S., on return from Military duty, to be Professor of Pathology and Morbid Anatomy and Curator of Pathological Museum, Grant Medical College, Bombay.

LIEUTENANT-COLONEL E. F. G. TUCKER, M.B., I.M.S., First Physician, Sir J. J. Hospital, and Professor of Medicine, Grant Medical College, is granted privilege leave of absence for five months and eight days with effect from the 5th July 1919 or from the subsequent date of relief.

THE Governor in Council is pleased to appoint Colonel Hormasjee Eduljee Banatvala, C.S.I., I.M.S., to act as Inspector-General of Prisons, Bombay Presidency, *vice* Major W.O.S. Murphy, M.B., B.Ch. (R. U. I.), D. P. H. (Ire.), I.M.S., pending further orders.

THE Viceroy and Governor-General has been pleased to make the following appointment on His Excellency's Personal Staff, with effect from the 18th March, 1919 :—

To be Honorary Surgeon.

Major A. E. J. Lister, M.B., F.R.C.S., I.M.S., *vice* Major E. A. C. Matthews, D.S.O., M.B., I.M.S., tenure expired.

CANTONMENT MAGISTRATE'S DEPARTMENT.

LIEUTENANT-COLONEL A. STREET, M.B., F.R.C.S., I.M.S., is granted, from the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough on medical certificate for such period as may bring the combined period of absence to six months.

MAJOR W. S. J. SHAW, M.D., I.M.S., is granted, from the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough on medical certificate for such period as may bring the combined period of absence to six months.

SUBJECT to His Majesty's approval, temporary Captain Charles Leonard Digby Roberts, Indian Medical Service, is permitted to resign his commission, with effect from the 1st May, 1919.

SUBJECT to His Majesty's approval, temporary Lieutenant Kaikhusroo Rustomji Dalal, Indian Medical Service, is permitted to resign his commission, with effect from the 31st March, 1919.

SUBJECT to His Majesty's approval, temporary Lieutenant Eledeth Kunjunn Menon, Indian Medical Service, is permitted to resign his commission, with effect from the 2nd May, 1919.

INDIAN MEDICAL SERVICE.

THE King has approved the retirement of the following officers of the I. M. S., and the grant of honorary rank as shown below :—

LIEUTENANT F. A. L. HAMMOND, in consequence of ill health. 17th March, 1919.

THE services of Major J. P. Cameron, I.M.S., are replaced at the disposal of the Government of Madras, with effect from the date on which he was relieved of his Military duties.

LIEUTENANT-COLONEL HERBERT HERBERT (retired) whose re-employment was notified in Army Department Notification No. 997, dated the 1st September, 1916, has been permitted to resign, with effect from the 1st April, 1919.

LIEUTENANT-COLONEL G. H. D. Gimlette, I.M.S. (retired), who was re-employed has been permitted to resign, with effect from the 21st April, 1919.

MAJOR G. D. FRANKLIN, I.M.S., Agency Surgeon, Southern States of Central India, held charge of the current duties of the office of Political Agent, Southern States of Central India, in addition to his own duties during the period from the 18th March, 1919, to the 1st April, 1919, inclusive.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Major H. Watts, M.B., B.S., M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon, Raipur, to the executive and medical charge of the Central Jail, Raipur, in addition to his own duties.

SUBJECT to His Majesty's approval, temporary Lieutenant Dharendra Lal Sarkar, I. M. S., is permitted to resign his commission, with effect from the 8th April, 1919.

THE services of Major E. W. Q. Bradfield, O.B.E., M.B., F.R.C.S.E., I.M.S., are placed permanently at the disposal of the Government of Madras.

COLONEL P. CARR-WHITE, M.B., F.R.C.S., Edin., Indian Medical Service, is appointed an Honorary Physician to The King, *vice* Colonel J. Smyth, M.D., I.M.S. 31st October, 1918.

LIEUTENANT-COLONEL R. G. TURNER, I.M.S., Civil Surgeon, from Fyzabad to Mussoorie.

MAJOR J. E. CLEMENTS, I.M.S., Superintendent, Central Prison, on reversion from Military duty, to the charge of the Lucknow Central Prison.

MAJOR J. F. BOYD, I.M.S., Military Medical Officer, Fyzabad, to hold Civil Medical charge of that district, in addition to his own duties, *vice* Lieutenant Colonel R. G. Turner, I.M.S., transferred.

LIEUTENANT-COLONEL S. C. EVANS, M.B., C.M., I.M.S., is granted, with effect from the 10th May, 1919 or from the subsequent date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough on Medical certificate for such period as may bring the combined period of absence to seven months.

LIEUTENANT-COLONEL A. W. R. COCHRANE, I.M.S., Superintendent, King Edward VII Memorial Sanatorium for Consumptives at Bhowali, privilege leave for six months, combined with furlough for two months, for a total period of eight months, with effect from the date he may avail himself of it.

IN exercise of the powers conferred by clause (b) of sub-section (1) of section 4 of the United Provinces Medical Act (III of 1917), the Local Government is pleased to nominate Lieutenant-Colonel T. Hunter, I.M.S., to be a member of the United Provinces Medical Council, *vice* Lieutenant-Colonel J. M. Crawford, O.B.E., I.M.S., resigned.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements, and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to "*The Indian Medical Gazette*," Rs. 14, including postage, in India. Rs. 16, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED :—

- Proceedings of the Kathiawar Medical Society Annual Report, South Tr-vancore Medical Missions in India, April, 1919.
- Lowson's Text-book of Botany (Indian Edition) Revised by Birbal Sahni, M.A., and M. Willis with preface by J. C. Willis, M.A., sc.D. (Cantab), Publishers: W. B. Clive, London. University Tutorial Press. Price 8-6. 1919.
- Annual Report of the Sanitary Commissioner with the Government of India, India, 1917.
- Report on the Statistical Returns of the Provincial Lunatic Asylums of Assam, 1918.
- Note on the Lunatic Asylums of Burma for the year 1918.
- Annual Report of Chemical Examiner's Department, Bengal, 1918.
- Bulletin No. 83, 1919 Agricultural Research Institute, Pusa.
- A new Nematode causing Parasitic Gastritis in Calves: A. L. Sheather, B.Sc., M.R.C.V.S.
- Immune Sera. By Charles F. Bolduan, M.D., America, and John Korpman, B.S. Fifth Edition: Messrs. Wiley & Sons, America, Chapman and Hall London.
- Pharmacy: Theoretical and Practical. By Edsel A. Ruddiman, M.D. 1st Edition: Messrs. John Wiley & Sons, Chapman and Hall, London, 1917.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM :—

- Major J. W. D. Megaw, I.M.S. Lucknow; Lt.-Col. Sutherland, I.M.S., Calcutta; Ashutosh Roy, I.M.S., Hazaribagh; Capt. Stott, I.M.S., London; Lt.-Col. E. Hasell Wright, I.M.S., Coorg (2); Lt.-Col. Donald, I.M.S., Abbottabad; Capt. R. B. Seymour Sewell, I.M.S., Calcutta; Lt.-Col. Sutherland, I.M.S., Calcutta; Lt.-Col. Marjoribanks, I.M.S., Aden; Asst.-Surgn. J. F. Henriques, Blindandi; Dr. Hari Charan Gupta, Muktagacha; Director, Imperial Bureau of Entomology, London; R. R. Mole, Esq., Madras; P. B. Dana, M.B., Bombay; N. S. Narasimhan, Bombay; Lt.-Col. Turner, I.M.S., Mussoorie; Lt.-Col. T. Entrican, I.M.S., Burma.

SPRT., 1919.]

Original Articles.

SOME IMPRESSIONS OF A VISIT TO THE TUBERCULOSIS INSTITUTE, MADRAS.

By E. S. MURTE,

CAPT., I.M.S.,

Arangaon Camp, Ahmednagar.

WHILE staying in Madras on sick leave in April last, I had, by kind invitation of Dr. P. S. Chandrasekhar, the Director of the King Edward VII Memorial Tuberculosis Institute, Madras, an opportunity of visiting this institute—a recent addition to the medical institutions of Madras. Madras, they say, is a city of distances; so it is, as the visitor will soon find out; but, as against this, there is the consolation to the medical visitor that it is also a city of model medical institutions—the biggest perhaps of their kind in India, if not also in the whole of the East,—e. g., the Maternity Hospital, the Ophthalmic Hospital, the Lunatic Asylum, the General Hospital and Medical College (particularly, the newly-planned ones, already completed on the plane of thought, and only waiting the touch of the financial mason for materialising themselves on the plane of matter). Anything second-rate, or petty, is apparently foreign to the conceptions of those who have, so far, been responsible for founding medical institutions in Madras; and it is the continuance of this wise tradition by those that are responsible for founding the Tuberculosis Institute, Madras, that makes it well worth a visit, although it now represents merely the first small concrete embodiment of a well thought-out scheme of anti-tuberculosis campaign in Madras. To me personally the visit has been very valuable and I trust it will be so to many others; it is therefore I wish to suggest, if I may, that no medical visitor to Madras should miss visiting this institute, where the good Director will always be glad, as he told me, to meet all medical brothers and sisters interested in this subject (and who is not?) and exchange thoughts with them.

Be that as it may, I accepted the Director's invitation with great readiness, especially because there had recently been some acrimonious controversy centering round this institute, more particularly in the matter of its location within the city limits, and of the practice of tuberculin therapy that is adopted here in certain selected cases—a controversy which had for some time past agitated the public mind so acutely that the Honourable Major-General Giffard, Surgeon-General with the Government of Madras, felt it necessary, on the occasion of

the last annual general meeting of the institute, to try to allay the needless fears of the public by assuring them thus:—"Many persons are in doubt as to what the institute intends to do. It is intended to be a place for *early* diagnosis and *very early* treatment, and also a place where students and doctors can learn the most up-to-date methods, and where the patients from Madras or mofussil can come and receive expert opinion. *It will do no harm to the city.* Many have written to the papers and several have asked questions if the Tuberculosis Institute will not bring into Madras a large number of tuberculous patients and therefore be a menace to the public health of the city. As a matter of fact, Madras already contains a large number of tuberculous patients; there are more than 10,000 people suffering from the disease here, and even if the Tuberculosis Institute does bring in a few more cases, it will make practically no difference. The other case in which Dr. Chandrasekhar's work is criticised is that he uses *tuberculin*. *It is undoubtedly a very dangerous drug in the hands of persons who are not thoroughly expert; but it is not, in the least, dangerous in the hands of persons who have made a careful study of the subject.* I hope that practitioners both male and female, and students, will soon become aware of the fact that very valuable clinical guidance can be obtained here, a knowledge better than can be learned in ordinary hospitals." I propose in this article to put down a few impressions of my visit to this institute, together with such observations as are relevant to the discussion of those facts that apparently seem to be still at issue, viz., the location of tuberculosis institutes and the practice of tuberculin therapy.

THE ROUTINE.

Each patient on admission is weighed, measured and provided with a case-sheet, which is a fairly formidable and carefully drawn-up document, containing a large number of printed questions, more or less, like a Life Assurance medical history form; when answers are returned categorically under all these headings, there is little chance of any useful fact being omitted; the Director believes in the excellent principle that, as between omission and repetition, it is better to repeat than to omit; repetition may be remedied but an omission may make all the difference between a correct diagnosis and an incorrect one—it may even be, between life and death. Armed with such a case-sheet the patient passes on to one of the Director's assistants (to a lady assistant surgeon in the case of female patients), who goes into the history (previous, family, present illness, etc.) and makes a thorough preliminary examination; these findings are all recorded against their appropriate

headings in the case-sheet and the patient then passes on to a second assistant, who applies the tuberculin tests (both Calmette and von Pirquet) as a matter of routine, takes specimen of sputum, and also of blood and urine, if this be necessary.

As a rule, the Director himself sees the cases (except urgent ones) only the next day after admission, as he wishes to know the results of tuberculin tests and sputum examination, to guide him not only in diagnosis but also in chalking out treatment.

From the above it will be seen that, though the institute has at present no accommodation for in-patients, and is, on that account, classed as an out-patients' dispensary, still, the examination is as thorough as in wards of our hospitals, each patient getting at least half an hour's individual attention from the expert staff of the institute.

The cases that seek admission are broadly divisible into three categories:—

(A) NON-TUBERCULARS—who come, or are sent here on suspicion; these are asked to obtain relief elsewhere; an exception is made in the case of persons suffering from bronchitis or asthma, who are treated till the paroxysm subsides and then re-examined, in order that no chance of early diagnosis may possibly be missed.

(B) SUSPECTS—who are examined and advised.

(C) TUBERCULARS—who are classified as:—

(1) Early cases, (2) Advanced cases, (3) "Hopeless" cases. Advanced and "hopeless" cases are advised to seek admission to the General Hospital; "but," said the Director pathetically, "nobody wants these cases and they almost invariably fail to get admission at the General Hospital." Early cases, if free from fever, are treated with tuberculin injections if the patient desires it and is prepared to bring a temperature record: he gets, in addition, medicines to relieve such symptoms as cough, diarrhoea, etc.

TUBERCULIN TREATMENT.

The Director is professedly and undisguisedly a believer in the use of tuberculin, but only in select, suitable cases. He is emphatically against its use by those who know no better than to judge dosage "according to the schedule," or from the directions on the wrappers of bottles containing tuberculin. Asked for his views on the use of tuberculin, he referred me to his published work "On Consumption," from which I take the following:—

"Tuberculin is not a universal remedy for all stages of pulmonary tuberculosis. *It has its limitations . . .* My own experience is that all cases of early tuberculosis can be satisfactorily treated by tuberculin injections. The best results are obtained in afebrile cases and resting febrile cases; I have found the tuberculin injections (with the new tuberculin) to be a valuable remedy even in cases of mixed infection, so long as the

evening temperature is under 99.5° F.; but in resting febrile cases, stay in a sanatorium is necessary. A combination of sanatorium and tuberculin treatment must, of course, give the best results. To be able to inject tuberculin with success in febrile cases, requires considerable experience; success depends on the careful selection of the case and attention to various details such as the amount of lung damage, the nature and duration of the fever, the condition of digestion, the amount of rest necessary, the selection of the right time for the injection, correct spacing of intervals, etc. These details vary from case to case. Each case has to be *individually studied* if tuberculin is to be used with satisfactory results, and no two cases can be treated alike. Tuberculin is not a specific for tuberculosis, like quinine for malaria or salvarsan for syphilis. All I say is, it is a very valuable aid, that cannot be dispensed with, in the treatment of early cases of consumption." That the percentage of cases which the Director finds suitable for tuberculin injections is by no means large, may be gathered from the fact that of the 1,314 different varieties of definitely tubercular cases admitted during the last year, not more than 182 were found suitable for injections; of these, only 75 actually went through a regular course. One thing that struck me very forcibly when witnessing the operation of tuberculin injection is the apparently healthy (and in some cases even robustly healthy) picture presented by a large number of these patients; in fact, one could not resist wondering whether these patients were *really* tubercular, and whether there may not have been some mistake somewhere, and those who have been or happen to be witnesses of such a spectacle may well sympathise with one who, in all humility, ventured to ask "What is exactly the matter, Doctor, with these persons; they look so well." The Director made no reply but silently handed me over for perusal their case-sheets, with temperature and weight records, and made no comment. Well he may; for, comment was needless, the mute case-sheets spoke convincingly, eloquently of undoubted cases of tuberculosis. "Things are not what they seem," said the poet. He might have also said "Things are what they don't seem."

Diagnose early: Don't wait for positive sputum.

This brings me to the next point, on which the Director lays the greatest possible emphasis, viz., *early diagnosis*,—that is to say in the case of consumption, *before tubercle bacilli are found in the sputum*; for, positive sputum means that the case is considerably advanced. The most favourable cases, alike from the standpoint of cure, are the cases that are recognised early: that ought to warn the genera

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practitioner against postponing decision till the sputum is positive, the general opinion of tuberculosis experts being emphatically against all such "waiting for positive sputum." In emphasising the extreme importance of early diagnosis, the Director quoted with approval the following view of a famous tuberculosis expert:—"The all-important points in the diagnosis of early tuberculosis are not bacilli in the sputum, nor definite signs of an active process in the lungs, but constitutional signs and symptoms, which show, only too clearly, were they correctly interpreted, that the patient is sick. *A diagnosis to be an early diagnosis must be made before there is breaking down of tissue with bacilli in the sputum*: in most cases, a positive sputum means moderately advanced tuberculosis, and that many of the patient's chances of cure are already gone.

Regarding the earliest indications of the disease, the Director places the greatest reliance on temperature, pulse (more than what is warranted by the temperature) and weight: and in connection with the recording of temperature it is just as well that I should mention here that it is a rule with him that the thermometer should be kept in the mouth (or in the rectum, as is the practice in certain sanatoria) *for not less than 5 minutes*, no matter whether the thermometer is certified to be a half-minute thermometer or a one-minute thermometer: and this practice is quite in conformity with the observations of Crombie, who, as a result of a large number of observations, came to the following conclusion, regarding the time for the accurate recording of temperature in India:—Axilla, ten minutes; mouth, eight minutes; rectum, three to four minutes.

"Disease waiting to be recognised."

"The early consumptive," said the Director, "does not seek medical advice as a rule. He has to be sought out, particularly in the houses of late consumptives who come in for treatment. Patients suffering from complaints other than tuberculosis are often desirous of making out a case to be worse than is actually the case, while the tuberculars make light of their complaints and refuse to believe that they are ill." This is the reason why the Director has laid down a rule that, as soon as a case of tuberculosis is discovered in any household, a thorough examination should be made, whenever possible, of all other inmates, and his experience in this respect seems to be exactly the same as that of another tuberculosis expert, Dr. Sutherland, who expresses himself thus in his "Pulmonary Tuberculosis in General Practice" (Cassell and Company):—"In practically every household, rich or poor, *with a single case of active, aggressive or chronic infectious pulmonary tuberculosis, there are other*

cases of tuberculous infections, waiting to be recognised."

"If recognisable early, why not recognised."

From the prophylactic standpoint, the extreme importance of early diagnosis—especially of cases "waiting to be recognised"—can never be exaggerated. It was with reference to the ravages of tuberculosis that our late King-Emperor, H. M. Edward VII, put the most pertinent and now famous query,—"*If preventible, why not prevented*,"—a saying, which, from its applicability to all preventible diseases in general, has since been adopted as the motto of many a public health organisation. Early recognition being the *sine qua non* of all successful prophylaxis, and certainly of prophylaxis of tuberculosis, those who are engaged in fighting tuberculosis may well adopt, in addition to the general war-cry of all Sanitary Crusaders, *viz.*, "*If preventible, why not prevented*," a distinctive special slogan, "*If recognisable early, why not recognised*."

Occupational incidence.

Judged from the attendance at the Madras Tuberculosis Institute, cases are discovered among persons of all occupations and of no occupation. Coolies and the unemployed come easily the first; students come next, a fact which emphasises the importance of medical inspection of school-children—a subject that has happily now passed beyond the stage of academical discussion and therefore needs no labouring; next come "clerks and officers" (railway, private and Government); a few cases were among teachers, both men and women—a fact which emphasises the need of examination of both the teacher and the taught; it is unthinkable that any institution should be allowed to employ teachers who can infect their pupils. In more or less the same category come medical practitioners and nurses, although these, at least, may be expected to know how so to keep themselves as not to infect others; an alarming number of cases are from among those who handle foodstuffs, *e.g.*, vegetable-vendors, fruit-sellers, cooks, butlers, etc.; the danger of infection from this group is widespread; fancy the butler of no less a person than a member of the Governor's Executive Council being tuberculous; yet, that was actually what the Director discovered in one particular case. I don't know if he intended me to keep this information secret; for, I remember that when he said this he distinctly lowered his voice. If that be the case, then, I, in my turn, hereby warn all those whom this may concern that the information I have passed on is secret; that should certainly make it all right.

Institutional treatment.

In the opinion of the Director no scheme of anti-tuberculosis campaign can be calculated to be satisfactory unless it includes the establishment of the following :—

- (1) *Tuberculosis institutes*—for thorough examination and expert advice.
- (2) *Sanatoria*—for treatment of suitable cases.
- (3) *Tuberculosis hospitals*—for advanced cases.
- (4) *Farm colonies*—where the poor and cured consumptives can find suitable employment.

Of these, the farm colony must necessarily be situated outside city or municipal limits, as the large area of land necessary for the purpose is not ordinarily available inside these limits. As for sanatoria, it seems to have been formerly held that they could be successfully established only in forests and among mountains, *i.e.*, in particular climates; but the more recent experience seems to support the view that they can be successfully worked in any climate, provided the essential factors of sanatorium treatment are provided for; and these factors are life in open and dust-proof air, regulation of exercise and rest, with careful feeding and medical supervision; and these can be arranged for in any climate, if we really mean business. The reason why they are usually established far away from cities is because pure and dust-free air is difficult to get inside or near these areas, and not because there is the danger of infection being carried to the healthy citizens; for, according to the Director, it is only the early cases that are advised sanatorium treatment and these are not infectious. As regards the Tuberculosis Hospital and Dispensary, the Director is definitely of opinion that their location in the centre of the city will not be a source of danger to the neighbourhood. "It is difficult to conceive," he says, "how the resident population of towns in which such institutions are located is especially liable to infection, the exposure being practically nil and the measures of prevention being thoroughly understood. As a matter of fact, the existence of well-conducted tuberculosis hospitals in any country must serve as an added element of protection to the public rather than as a menace. The development of tuberculosis among physicians, nurses and attendants in institutions for consumptives is known to be exceptionally rare, in spite of prolonged, intimate association with invalids in advanced stage of disease." Regarding tuberculosis dispensaries, the Director is emphatically of opinion that they should be located in the centre of the town. In this connection, I venture to make, if I may, one or two small suggestions: our tuberculosis dispensaries should, according to the Director, be situated close to our general hospitals; so far so good; but it also seems to me

they may as well form a part, although a distinct part, of our general hospitals; such names as "*Tuberculosis Dispensary*" or "*Consumption Clinic*" tend to scare away patients except perhaps those who are in the last stages. Anyone who knows anything of Indian conditions should know that while an independently situated "*Consumption or Tuberculosis Dispensary*" may be very much dreaded and not be as popular as it should be, the same institution worked as "*The chest diseases clinic of the city general hospital*" may be immensely popular; for, the dread of being diagnosed as a "*Consumptive*" conjures up before the mind's eye visions of impending dissolution and death; and few would be in a hurry to go to places where they fear their death-warrants may be read out to them: in fact, they may well fancy that to walk in there is to walk straight into death; the names are, *per se*, suggestive of death—not of life; but there is no such evil tradition associated with our general hospitals; and "*chest diseases clinic or department*" is no more terrifying than the ear, throat or any other special clinic or department: it is only by such institutions that we may confidently expect to attract our early cases, cases that are, so to speak, "*waiting to be recognised*," and whose very early recognition is the *sine qua non* of all successful anti-tuberculosis work, as well as a consummation devoutly to be wished for by all interested in fighting out this fell disease (and who is not?). Critics may say and perhaps will say "What is there in a name?" It does however seem to me that in this particular instance there is a good deal in the name—as much as to make all the difference between success and failure.

Apropos of this same issue, there is also another point of topical interest, which we cannot altogether overlook, in this land of bridegroom-trade, and at a time when uncontrolled profiteering has resulted in bridegroom prices rising even more rapidly and acutely than the prices of food-stuffs—so much so that a controller of bridegroom-prices may perhaps become even more necessary than the Controller of Food-stuff-prices. If a girl were to be taken to a general hospital and treated at the "*Chest Diseases Clinic*," there is nothing in it which may be urged as a valid reason for demanding an increased bridegroom-price when the girl is put on the marriage market; but, if once she were to be taken (it may be for bronchitis only) to a tuberculosis dispensary or treated at a tuberculosis hospital, it is of little avail for parents to urge that the girl was never treated for tuberculosis; even the Director's expert testimony may not save the luckless parents of the girl from being loaded heavily, when bridegroom-premium is fixed, for insuring the daughter's marriage.

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One suggestion more, and I am done. No visitor to the institute should fail to visit the Director's splendid special library of tuberculosis literature; it is a very imposing collection, including, as it does, a number of authoritative works in French, German, etc., and, so far as I am concerned, it might as well have been in Timbuctoo or Maritan language; for, all alike were Greek to me, except those written in English or Sanskrit.

ORIENTAL SORE OR BAGHDAD BOIL.

BY D. J. HARRIES, M.D., B.S., B.Sc., F.R.C.S. (Eng.),
CAPTAIN, R.A.M.C.

Surgical Specialist, Ambala and Lahore Divisions.

General considerations.—This disease occurs in the tropical and sub-tropical regions of both the Eastern and Western hemispheres. The exact method of contracting the disease has not yet been definitely settled. Various parasites have been blamed, such as the bed-bug, the mosquito, and several others. Wenyon showed that an "oriental sore" can be experimentally produced by contaminating an abraded surface with some of the material from another sore. Auto-inoculation apparently also occurs, as it is quite common for a crop of "new boils" to appear in the vicinity of an existing one. Cunningham, in 1885, first demonstrated the presence of deeply-staining bodies in the endothelial cells of an oriental sore, and these bodies, which are now known as Leishman-Donovan bodies, have been shown to be present in every case, although in the so-called button or keloid forms contracted in Africa, it may be necessary to employ cultural methods before the presence of the organism can be demonstrated.

The exact relationship existing between kala-azar and oriental sore is still undecided. It has been shown that Leishman-Donovan bodies in kala-azar and oriental sore are indistinguishable and that the flagellate forms obtained by cultural methods are also practically identical in the two diseases. So far, however, I have neither seen nor read of a case showing kala-azar and an oriental sore at the same time, or even at different times. The presence of one of the lesions renders the patient immune to the other, at least that is the explanation usually given. It is, however, possible that we are dealing with different phases of the same disease. We know that the primary lesion of syphilis may be overlooked, and it is quite possible for the same thing to occur in the case of kala-azar.

Local symptoms and changes.—Several varieties of oriental sores have been described, but as all these varieties represent differences in the way a sore progresses and heals, it is better not to consider them as distinct types.

As a rule the disease makes its appearance as a small papule and is generally said by the patient to have started in a mosquito bite. This papule breaks down and forms a small crater, varying in size up to $\frac{1}{2}$ " \times $\frac{1}{2}$ " \times $\frac{1}{4}$ " deep. This change may occur in a few hours or it may take several weeks. It then develops along one of three lines.

It may develop into:—

1. A spreading shallow ulcer, with an indurated and heaped-up edge. The base of the ulcer becomes covered over by a thin yellowish scab, and if this scab is lifted off, a layer of pale granulation tissue is exposed. This is the variety which clinically resembles an early malignant ulcer. I have excised such a sore on the ground that the edges were suspicious of malignancy. The finding of the Leishman-Donovan bodies in the edges settles the diagnosis, but a microscopic section does not, as the appearance is indistinguishable from that of an epithelioma with well-marked cell nests. I have not seen any of these ulcers developing into a definite carcinoma, but it is quite possible that such a course might be pursued in the absence of treatment. When we consider the fact that minute particles of soot can give rise to a chimney-sweep's cancer and that this lesion sometimes remains unchanged for years before definitely becoming malignant, it seems quite justifiable to assume that the Leishman-Donovan bodies, which can cause a lesion showing epithelial proliferation clinically and microscopically indistinguishable from an epithelioma, may also be capable of giving rise to a true epithelioma. In both the sweep's cancer and in this variety of oriental sore, the epithelial proliferation is caused by a chronic irritant, but it does not depend on the life-history of the irritant, as soot is certainly not alive, whereas the Leishman-Donovan bodies are, and can be cultivated into living flagellates. As far as I am aware, no attempts have been made to produce a carcinoma in lower animals by employing Leishman-Donovan bodies as the irritant, although it has been shown that it is possible to produce an oriental sore in them in the same way as in the human subject.

2. A shallow serpiginous ulcer with an undermined but non-indurated edge. This has a tendency to spread at one edge while healing at the other. In this variety the Leishman-Donovan bodies can be easily found.

3. A hard nodule, generally quarter-inch to half-inch in diameter, slightly raised above the level of the surrounding skin. It looks like a smooth, fibrous nodule, but microscopically it contains cell-nests. The Leishman-Donovan bodies are not always found in these nodules, but the presence of the parasites can be demonstrated by cultural methods.

The various names given to the lesion in different countries seem to show that the progress of the lesion differs in different localities, and the names Baghdad Boil, Oriental Sore or Granuloma, and Biskra Button are obviously suggestive of the variety seen in these places.

The factors controlling the course pursued by any given case are imperfectly understood. A small papule, after developing into a crater, may rapidly become a nodule. I have seen as many as a dozen on a forearm follow this course, and ultimately disappear in the course of a month. Another papule, after breaking down, proceeds to develop into a spreading ulcer, as described above, and ultimately heals, leaving a slightly depressed, smooth scar, which is white in the centre and pigmented at the periphery. The surrounding skin is also pigmented for a distance of half to one inch. These scars are amusing in view of the teaching in England up to quite recently, that a soldier or sailor with a pigmented scar may safely be assumed to have had syphilis. Numerous mistakes must have been made in the past, and, indeed, as the Wassermann is + in almost a third of the cases of oriental sore, it is still possible for errors to arise.

General symptoms.—As a rule general symptoms are absent, except in the early stages. During the papule stage there may be general malaise, a rise of temperature to 100° – 102° , vague pains in the joints and muscles, and slight tenderness of the nearest intercepting lymph nodes. These symptoms disappear as soon as the papule has broken down, but recur with the appearance of any fresh papules. As a rule the nearest lymph nodes enlarge slightly and remain enlarged until the sores have completely healed. There may be slight lymphangitis for a day or two, but it is rare. In only one case have I seen more pronounced symptoms. This was a patient who developed successive crops of papules at intervals of three to six weeks. About six to twelve appeared at a time, and, altogether, during the eight months he was under treatment he developed over a hundred oriental sores. In his case all the stages and varieties could be examined at the same time.

Every new crop of papules was accompanied by a rise of temperature to 101° – 103° , nausea and vomiting, vague pains in the abdomen, and changes in the joints. Both knees rapidly filled with fluid, but there were no particular changes. The ankle joints showed considerable particular infiltration. Other joints became painful, but no accompanying changes could be made out. In two to three days all these symptoms disappeared. The knees were always treated by the application of a tight bandage, over a thick layer of wool, extending from a point three inches above the joint to a point three inches below it. All the fluid was invariably absorbed in two to three

days. The infiltration of the particular structures of the ankles also disappeared in a few days. The abdomen showed nothing abnormal, and the spleen could not be felt.

Treatment.—This can be considered under two headings:—

(1) Internal remedies,

(2) Local measures,

(1) *Internal remedies.*—Several drugs have been tried; such as antimony salts, salvarsan, and other arsenical compounds.

The best results have been obtained by the intravenous administration of a 1% solution of antimony tartrate, starting with 5 c.c. and gradually increasing the amount up to 10 or 15 c.c. It may be given daily or every other day.

(2) *Local measures.*—These can be further subdivided and will be considered under three headings, (a) Local applications, (b) Ionization, (c) Complete excision.

(a) *Local applications* cause necrosis and sloughing of the sore, and repeated applications are generally required to completely eradicate the lesion. This method is painful and is strongly objected to by the patient after his first experience of it. The following represent a few of the multitude that have been tried:—

Twenty per cent. methylene blue ointment.

Two per cent. antimony tartrate ointment.

Five per cent. potassium permanganate ointment.

Powdered permanganate.

One per cent. solution of mercuric chloride.

Five per cent. solution of potassium permanganate.

(b) *Ionization.*—This has been recently tried by Captain T. G. Evans, Officer-in-charge of Physio-therapeutic Department of the 34th General Hospital. He has reported several cases of complete cure following 2–4 applications, at intervals of three to four days. The best results have been obtained in early cases in the crater stage. In the more advanced stages cures are not so rapidly obtained, but even in these a considerable amount of improvement can always be observed, after a few applications, and a cure is ultimately obtained.

(c) *Complete excision.*—This method has undoubtedly given the best results. An isolated sore should always be completely excised, together with a margin of half-inch of the surrounding healthy skin. The skin edges are then accurately sutured together in the ordinary way. So far, all the cases I have treated by this method have healed by first intention.

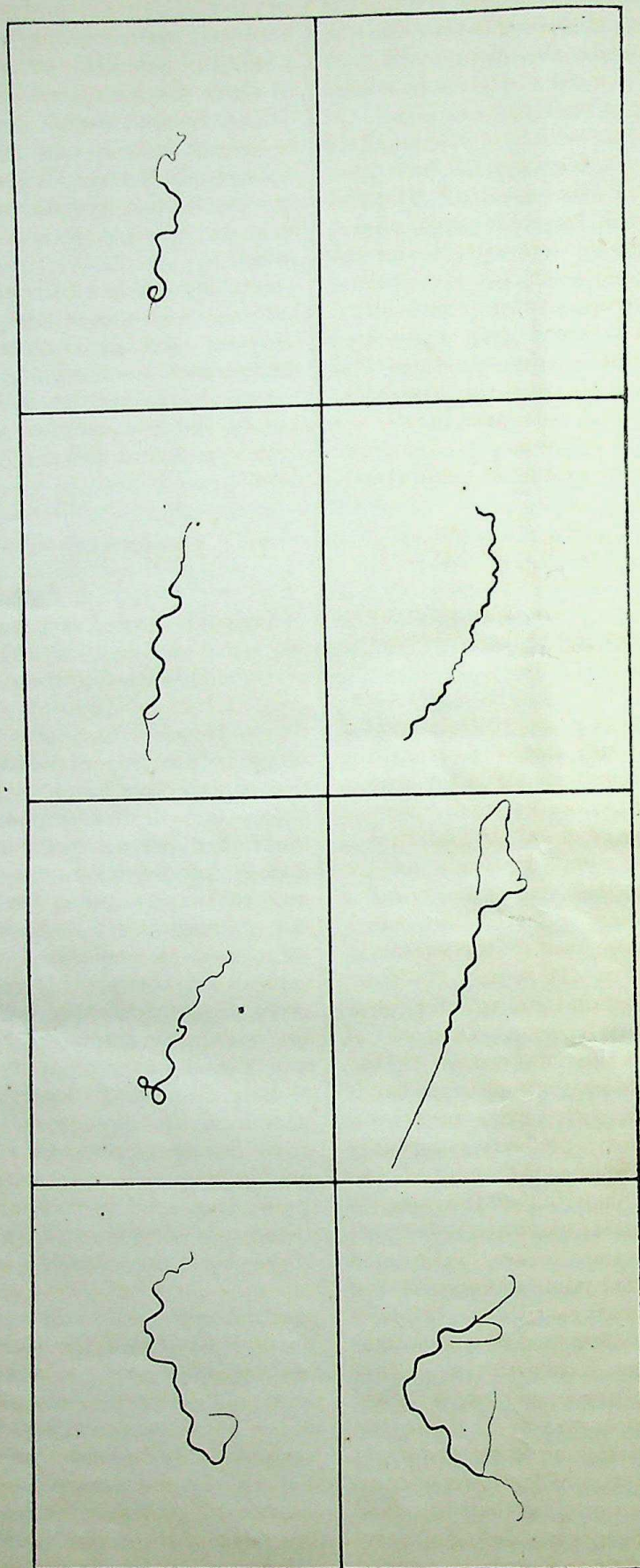
Multiple sores can also be completely excised, and any raw areas, which cannot be completely covered over by skin, are allowed to granulate, and, if necessary, grafted later on.

So far, I have not seen any signs of recurrence in any of the cases treated by excision, although

DEMONSTRATION OF FLAGELLA OF SPIROCHÆTA CARTERI.

By P. R. BHANDARKAR, B.A., L.M.S.S., PURUSHOTTAM SINGH BAIS, B.A., M.B., B.S., AND
SUB-ASSISTANT SURGEON S. W. BHAGWAT,

Indore.



Spirochætes of Indian Relapsing Fever, showing terminal flagella, stained after Nicolle and Morax
(Drawn by Mr. Pratappa, Artist, Indore.)

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some have been under observation for two months afterwards. Moreover, it is possible that excision may completely eradicate the disease. We do not know at present how far the lesion is a local disease, and how long it remains local.

I have seen a case in which a second crop of sores appeared on a leg which had been completely healed for six months. The first crop had been treated by local applications, combined with antimony internally; and the scars, which were situated about two inches above the site of the second crop, seemed quite healthy. It is possible that the second crop represented a fresh infection, but it is safer to assume that these scars, or some other tissue in the body, may have harboured the parasites in a latent condition, and that the second crop merely represented a recurrence of the original attack.

DEMONSTRATION OF FLAGELLA OF SPIROCHÆTA CARTERI.

BY P. R. BHANDARKAR, B.A., L.M. & S.; PURUSHOT-TAMSINGH BAIS, B.A., MB., B.S.; AND SUB-ASSISTANT SURGEON S. W. BHAGWAT,

Indore.

To our knowledge no one has yet demonstrated the presence of flagella in *spirochæta carteri*, the variety of spirochætes found in Indian relapsing fever. Recently there has been a small epidemic of this fever in Indore, Central India, and a report of our observations will be made in due course. Just now, however, we would bring to the notice of your readers a method by which we have been able to demonstrate the flagella of the microbe. Two of us (P. B. and S. W. B.) first made an attempt to stain them by van Ermengem's method without success. One of us (P. R. B.) then suggested the employment of the method of Nicolle and Morax, which in his hands had proved successful with other organisms. The use of this method gave perfectly satisfactory results, the spirochæte showing one or two flagella at one or both ends. The following is the technique of the process employed:—

Receive blood, from the pricked finger of a patient, in citrated normal saline solution, in the proportion of 1 in 10, and centrifuge. Place a drop of the supernatant clear fluid on a thoroughly clean glass slide, touch it with the end of another glass slide (with rounded edges), held at an angle, allow the drop to spread along the edge by capillary attraction, and draw the upper slide slowly towards the end of the lower slide in a direction away from the drop, so that the fluid follows the edge of the moving slide and is not pushed before it; dry in air and stain by method (iv) described at p. 151 of Besson's *Practical Bacteriology* (Eng. trans. Hutchens; 1913). After washing and drying, examine in cedar wood oil. If the preparation be satisfactory, put on a

cover-glass, thus mounting the specimen in oil. Protect from unnecessary exposure to light. As a rule the best fields of the preparation are those in which the background is almost colourless.

The method requires some practice and care to ensure success, and all preparations are not equally satisfactory. The slides must be perfectly clean, and before use must be heated rather strongly by passing through flame and allowed to cool.

Our later trials with van Ermengem's method have met with success, but the results so far have not been nearly as satisfactory as those with the method here described.

Our thanks are due to Mr. Prataprao, artist, Indore, for the accompanying drawings, made from a successful preparation under the microscope.

THE TEMPORARY OFFICER IN WAR.

BY AN A. D. M. S.

THESE are days of Sabhas and National Congresses, of discussions, in and outside the public press, with regard to the possibility—sometimes even the desirability—of a closer social intercourse between East and West. And yet it seems in many quarters to have escaped notice that an experiment on a hitherto unprecedented scale is actually on foot, and that one at least of the Indian Services previously consisting almost entirely of Europeans, has opened its portals wide to Indians during the war. Not only this, but officers of different races—Hindus, Europeans, Mohammedans, Parsis—are actually living and even-messing together to an extent never dreamt of before. In face of the reforms now apparently in prospect, this seems to me, both from the medical and the social standpoints, a most important departure. Circumstances have brought it prominently to my notice, in its various stages, and under different conditions, and I purpose to attempt an estimate of how far it has succeeded, and in what respects, if any, it may be said to have failed.

The beginning of 1915 found me installed as Superintendent of a Provincial School for Sub-Assistant Surgeons, with the concurrent charge of a large hospital which dealt with a considerable amount of surgery. Like the rest of the few remaining I.M.S. men remaining in civil employ in the Province (be it said in palliation that we had already for the most part applied for active service), I was short-handed, and doing a considerable amount of work not ordinarily associated with the post.

Some of the most efficient members of the staff of both hospital and school, together with a large proportion of our European nurses, had left early in the war to join a war hospital. This we had to accommodate ourselves to from the

start, but what hit us even harder was the fact that almost invariably, just as our junior men were beginning to be useful, they would follow—the graduates receiving temporary commissions. This was what brought the new institution so prominently to my notice. It was annoying, but I can fairly say that we put no obstacles in the way of the departure of these men, however necessary they might have been to the work of the hospital. X-ray specialists, bacteriologists, and, more important, men who had been put through the theatre and were doing, in some cases, quite good independent work, all went, and it was a pleasant reflection that they, at all events, in contradistinction to many of the private practitioners and raw graduates one saw joining up, would be able to pull their weight in their own particular line. We must have sent, for instance, from first to last, some half dozen men with quite respectable surgical experience. And an interesting sign of the times was the acquisition of commissions by one or two of our own students of the Sub-Assistant Surgeon class, who, having taken a higher qualification, had made themselves eligible. One of these I heard of later. He had been in a large war hospital on field service, and was spoken of as one of the best men they had had. Similarly—a thing which gratified both staff and students very much—some of our Sub-Assistant Surgeons who had volunteered in their original capacity were mentioned favourably for services in the field, and one or two came back in all the splendour of a well-earned decoration. This was the bright side of the new recruitment. But the Army was short of doctors, and side by side with these good keen workers one saw with regret a considerable influx of practitioners, some of them quite elderly, who were by no means so suitable. That factor has to be borne in mind in weighing the results.

A disadvantage under which all the temporary officers laboured at that time—unavoidable no doubt, owing to the urgent demand for reinforcements—was the total absence of any system of training. A man was thrown into uniform and whisked away for duty, without even being taught how to salute, or the elements of military work. In all fairness that has to be remembered also, when little jokes are made at their expense.

As time went on, repeated applications took effect, and I was sent on active service. Here I had the opportunity of observing our friend the temporary officer more closely, under his new metamorphosis, and the spectacle was, as everyone knows, and as was only to be expected, sometimes pleasing and sometimes painful. Remember that at the best he had a great deal to learn, while at the worst he might be not only ignorant of his work, but drawn from an inferior class, and quite incapable of assimilating new ideas and managing

himself an agreeable member of society. Nobody expected that the new arrivals would be as efficient as the men of the old service. How could they be at first: has not the present Secretary of State admitted that we must be prepared for a temporary loss of efficiency as a consequence of the appointment of Indians to the superior services, which will be one of the first results of his proposed reforms? The new officers showed, for example, on the whole, as compared with their British colleagues, a lack of initiative and a want of general handiness. Sir Frederick Treves once remarked that every student of surgery should do a preliminary course of carpentry. He was speaking of Englishmen, but how much more does this apply in India! Every English schoolboy serves some sort of apprenticeship with a hammer and saw, and, by dint of applying one or other occasionally to his thumb, learns some handicraft. The poor Indian student, on the other hand, has none of this previous experience to fall back upon, and, in the absence of sufficient cadavers for courses in operative surgery, has only too often to acquire such dexterity as he may at the cost of the living subject. The same weakness is apt to come out, apart from professional matters, in dealing with the transport and other difficulties which are inseparable from service, particularly in semi-civilized or hilly countries. But when all this is admitted, I submit that the temporary officer has done, on the whole, not badly. He is usually well grounded in theoretical work (except some of the elderly men who got in here and there), and that being so all that is required is that someone with experience should take him in hand and give him the advice, and see that he gets the practice he lacks. It must be remembered that many of our own people, newly passed out from the British schools (particularly one or two universities that might be named), are very wanting in practical knowledge, and of little use for responsible work until they have done a house appointment, and one must not expect more from the Indian graduate. One surprising thing is that the temporary I. M. S. man has often done better regimentally, away from all his old associations, and thrown on his own resources, than in medical units. I have known several Indian regimental medical officers who have earned golden opinions, not only professionally, but also socially. This I think, incidentally, speaks very well for the broadmindedness of British combatant officers. There is no doubt they viewed the advent of the strangers in their messes with dismay at first, and it is very much to their credit that they eventually received them with such impartiality and friendliness. Indians for regimental work should, however, be specially selected, for their own and other peoples' comfort. For instance, to put a man who

wishes to live as far as possible on orthodox Hindu lines into a British mess; nor is it desirable that a Hindu or Muhammedan who has almost everything to learn about European social customs should acquire his experience under those conditions. It simplifies things for everyone if he can begin by joining a mess of his professional brethren, some at least of whom are his own countrymen. It is no use attempting to burke the fact that there have been instances, here and there, of men entering messes, who, apart from absence of knowledge of European table customs, would not have passed muster in any company of Indian gentlemen, and such cases are always made the most of by people who would like to see the experiment fail. On the other hand, I have known some very happy mixed messes, and it is quite clear that, so far as reasonable people are concerned, the more they mix, the better the different classes appreciate each other's good points, and the more indulgent they are to the bad. And neither West nor East has an exclusive monopoly of either.

It is quite easy to make an experiment of this kind fail. There is no denying that the temporary Indian officer is inclined to be touchy, and if you get the wrong side of him at the start you may make very little out of him. To begin with, as has been said, he seldom displays the all-round capacity of a European for any work that may come along. This, I think, may be attributed to two causes: the general tendency of the Indian mind to the passive rather than to the active, the abstract than the concrete; and the want of opportunities for practical work. I have usually found that if one takes the trouble to help an Indian to acquire the practical details of his work he is not only appreciative but responsive. It is unfortunately a fact, however, that opportunities for work of any tuitional value, apart from the larger stationary hospitals, and in the absence of severe wound casualties, are rare, and I fear that many of our men will return to civil practice knowing little more of purely professional matters than when they left it. This, however, will be counterbalanced by a broadening of their general outlook, which should be of immense service to them.

A great deal depends, at the present juncture, on the tact and good will of the senior I.M.S. officers who have the handling of these new recruits. The old-style regular man, with all his virtues, had often one very serious failing from the point of view of Indian efficiency—a defect of his qualities: accustomed to badly trained subordinates, he did nearly all work of a responsible character himself. This led inevitably to two consequences. His assistants became more and more dependent on him and wanting in initiative, and he resented any

assertion of equality, in position or judgment, on their part. We had a very good example of something of this kind in one of our larger hospitals. The man in charge, a keen surgeon and admirable administrator, had little liking for or patience with his Indian commissioned officers. He turned them nearly all down as inefficient, and practically ran the institution himself, with the assistance of his sub-assistant surgeons. The state of things was abundantly clear from his confidential reports. To judge from these all his commissioned officers except one were incompetent loafers of the worst description, with seditious tendencies, while nothing was too good to be said of his sub-assistant surgeons. The proof of the unfairness of these criticisms on the temporary officers has been that two men who have since succeeded him in the command of the unit are agreed that with one or two exceptions the staff are not only very fairly efficient, but also very decent fellows. I must, however, still admit that we have not been able to find a single temporary man in this unit whom we can conscientiously appoint as a surgical specialist, though I should very much have liked to do so.

Australians and Canadians, fine fellows as they are, and often, I believe, very efficient, have still much to learn in the matter of consideration for other people's feelings, especially if the other people have dark skins. The "damned-nigger" attitude has got to be dropped on Indian soil, or when serving with Indian troops at any rate. At the same time one can forgive them if they are a little puzzled by some oriental traits. I know of one Hindu officer (a very good fellow too) who wept because a couple of mules with some hospital equipment had gone astray. An episode of this kind would certainly excite the fierce contempt of many overseas Britons. But it is as well to remember that the Indian is not the only man whose tears are near the surface. Southern Europeans generally, the courage of many of whom is beyond criticism, have often a little weakness that way. And this susceptibility even has its attractive side sometimes. For instance, I found it easy to excuse the tears which a poor old dooly-bearer wept over my prostrate body when I was thrown out of my car the other day. It is pleasant to record, in this connection, that the reputation of our new men as regards courage—and I have been at pains to get the evidence on this point—on the whole stands high. I have only heard of one instance that might be spoken of as rank cowardice, and a considerable number of combatant officers have told me that the Indian doctors who have come under their notice have, generally speaking, shown an excellent example in this respect. This is very creditable, having

regard to the sedentary classes from which they are mostly drawn.

It will be gathered from the above somewhat desultory remarks that the conclusion I have arrived at is that the I. M. S. (T. C.) Indian officer is by no means the hopeless failure some people would have us believe. At the same time it would be idle to pretend that he is perfect, or indeed yet up to the standard of his European colleague. The latter, however, has been carefully selected in peace time by examination and has undergone special courses of training to prepare him for the service. He has not been recruited in a hurry, without any particular regard to fitness, and thrown at once into the vortex of active service. May we not also—especially those of us who have been more or less responsible for medical education—reasonably ask ourselves whether something more does not remain to be done in the way of the adaptation of the teaching in Indian medical schools to practical necessities? I mentioned Treves' remark in no facetious spirit. Why, many of our Hindu students have presumably never used a knife before they come to us. It would, in my opinion, be an excellent thing to institute a short course in carpentry during the preliminary scientific period, and also to teach men to sew. And in the same direction would be a more definite encouragement of games. Drill, in the province to which I belong, has already been instituted, with the best results, not only for military but also for civil men, and if facilities for rowing or sailing are available nothing could be better; the sailor is the proverbial handyman. Coming to the more technical subjects, every endeavour should be made to give them a practical cast. As regards surgery, much may be done in the dissecting room towards teaching men how to handle instruments—much more than is usually done; and no opportunity of teaching operative work by practical courses on the dead subject should be lost. These measures, and modifications of existing courses having the same end in view, would not be without effect. And to crown all, a much larger utilization of the facilities already existing in not only the teaching but the district hospitals is indicated in the way of the creation of short-term house appointments for tuitional purposes. I well remember the remark of a professor on the occasion of my own first appointment as house surgeon in an English hospital. "No man," he said, "is of much use until he has done a house appointment." I hoped at the time that he did not mean this in any personal sense, but however that may be it is certainly a great advantage to have held one, and there is an enormous amount of good tuitional material running to waste in our up-country hospitals to-day.

Then, when you have educated him, and caught him for the Army—remember that our

Indian fellow-subject is always a little super-sensitive, and requires careful handling. The King said "a little more sympathy, gentlemen" or words to that effect, and Matthew Arnold pointed the same moral in an essay, many years ago,—neither of them rank as sentimentalists. Lady Hester Stanhope, from her mature experience as chieftainess of an Arab clan, thought the best type of man for dealing with orientals was, not a diplomatist, but a bluff British naval officer. But doesn't that come to the same thing? Indians have proved capable of managing their own affairs satisfactorily in Mysore, and have demonstrated their efficiency on the Judicial Bench. There appears to be no reason why they should not become worthy members of their own Imperial Medical Service.

I cannot leave this subject without a brief reference to a body of men—are not their merits at present, perhaps, somewhat meagrely acknowledged?—to which I am proud, in normal times, to belong. I mean the Civil Surgeons of the regular I. M. S. As regards the higher administrative posts (and here, for a brief season I must say "*mea culpa*") I have always considered our reversion an anomaly, and, in some cases, under the conditions of up-to-date European warfare, it must have proved a dangerous anomaly. We have little knowledge of soldiering in any form—none at all of military law, and the higher walks of military medical organization. But if you want a man with some idea of military discipline: a man who has been accustomed to hospital and other administration, sometimes on a considerable scale: a man who will cut off your leg or remove your appendix, and who has, moreover, been accustomed, on the slightest provocation, to make bricks without straw: if you want such a man, I say, commend me to the I. M. S. Civil Surgeon. This association of qualifications seems to be taken for granted where he is concerned, but I do not think you will easily find it elsewhere.

SNAKE VENOM AS A THERAPEUTIC AGENT.

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It has occurred to me for many years to wonder whether snake venom could be made use of as a therapeutic agent, and I now venture to make a few remarks on the subject with some suggestions. It is well known that many snake venoms have an immensely toxic effect on all forms of animal life, and it seems to me probable that it might prove destructive to such pathogenic animal organisms as the *Trypanosoma*, *Spirillum obermeieri*, *Spirochaeta pallida*, and

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the *Plasmodia*. It is a general rule so far as the higher animals are concerned that the lethal dose of snake venom depends on the size of the animal operated upon. If this holds good all down the animal kingdom, a dose of snake venom necessary to kill such lowly organisms as those enumerated above, would be completely innocuous to the host infected by them.

I would suggest, in the first place, testing, say, cobra venom, in a disease like surra. This disease would be a peculiarly good one to experiment upon, because many of the animals susceptible to it are large, and it would be easy to establish the lethal dose for the camel and horse, and then introduce the venom into the blood stream in sublethal doses to see if it has any effect on *Trypanosoma evansi*. If found destructive to this organism, experiments could be extended with regard to the others just cited.

Cobra venom can be taken internally in large doses without any ill effects so long as there are no broken surfaces in the alimentary tract. I think I am right when I say, speaking from memory, as I have no works with me to refer to, that cobra venom preserves its toxicity in the stomach, and it is not until it reaches the duodenum that the digestive juices so alter its composition as to render it inert. The agent responsible for this is the pancreatic juice. Obviously, then, if these remarks are well founded, cobra venom given internally would not be absorbed into the system as such, and to test any supposed virtues it might possess it would have to be injected as such subcutaneously or intravenously.

As an economic product, should it be found to possess the virtues I suggest, I have little doubt it could be obtained in large enough quantities to be available in time in every dispensary.

I see no reason to suppose that it would be any more dangerous to employ therapeutically than such potent vegetable alkaloids as strychnine, hyoscyne, etc., which the chemist is able to standardise and bring within the reach of the physician.

A PLEA FOR SIMPLICITY IN THE PREVENTION AND CURE OF BACTERIAL INFECTION.

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I SHALL begin the article proper by quoting a few questions that have been put to me, from time to time, by intelligent laymen who had received information on matters bacteriological from their former medical attendants, because a better illustration of the confusion of ideas in the minds of many, on this subject, would be hard to find.

Then I propose to show that the body does not need an increase of the material employed to fight organisms—protective substance—which vaccines and serums aim at supplying, because all the protective substance necessary to combat infection is present in the system. Only the opportunity to get properly to work, and keep at it, is needed.

Finally, it will be made clear that by the use of the very simplest of methods we can give protective substance all the assistance it requires to ward off infections, successfully and if already present, to bring them to an end as soon as possible.

Here are the questions referred to above.

If enteric fever, diphtheria, cholera, influenza and other infections are solely the result of microbes, and there are microbes everywhere, and microbe carriers in every community, and microbes in people who have not at any time developed the disease which these infesting microbes produce, then, how in the name of logic and common-sense can the cause of these diseases be attributed to microbes?

Again, do germs cause a disease a part of the time and then a part of the time do not? If so, are there individuals whom they never attack and others whom they never immunise? If germs create immunity, why do we have chronic infections? What causes the chronic infection?

The truth of the matter is, of course, this,—the cause of any disease from the standpoint of Natural Science is always internal and is frequently referred to by us as predisposition or susceptibility.

Consequently, microbes or germs along with climate and other external influences are only the special exciting (secondary) cause, and cannot therefore be regarded as the cause from the standpoint of Natural Science.

In other words, unless the susceptibility to disease is already present, neither micro-organisms nor changes in the weather can produce infection.

What is meant by the susceptibility to infection? Experiments by Foder and others have established the fact that the power of the body to resist infection depends on the chemical composition of the blood, that is to say, its degree of alkalinity. Oxidation processes and the activity of our protective substance are increased by an alkaline blood serum, whereas a neutral or acid one interferes with this mechanism of defence and favours the growth and development of micro-organisms and infections. This well accords with the commonly observed fact that in certain chronic diseased states, such as nephritis and diabetes, which are attended with a diminished alkalinescence of the blood, the susceptibility to infection is markedly increased.

So we may say with the late Dr. Lahmann, the originator of the idea, "Lessened alkalinity of the blood is the predisposing cause of all infections, while on the other hand a normal alkalescence of the blood renders its possessor rationally immune to infections of all kinds."

Here I would explain that the expression "alkalinity" is used in the accepted sense of titration alkalinity, which indicates the power of the blood to neutralise weak acids. In the strictest language of modern physical chemistry, normal blood is neutral, having no excess of hydroxyl atoms.

Now the blood is formed from what we ingest, and the most important mineral elements that pass into the blood and tissues and preserve their alkalinity are iron, soda, and lime.

The iron of the hæmoglobin and the body cells renders possible the process of oxidation. The soda compounds (not sodium chloride, but sodium carbonate and phosphate) bring about the excretion of carbon dioxide and neutralise various acids found in the blood and keep it alkaline. Lime, in addition to building up the bones and the teeth, also assists in the neutralising of acids, especially phosphoric acid.

Should any of these elements be present in insufficient quantities in our diet, acids accumulate in the blood, lower its alkalinity and lessen our power of resistance to infection.

Reference to Wolff's well-known table of food analysis shows that, while the water, protein, fat, and carbohydrate contents of foods can be expressed in percentages, the mineral elements are present only in such limited proportions as to require their being calculated in so many parts per thousand of dry substance. So if our choice of food-stuffs is habitually an unhappy one, the intake of soda and lime will fall short of the amount necessary for a high standard of health.

Let us now broadly examine the value of the different classes of food with regard to their iron, soda, and lime contents—for a detailed statement I must refer the reader to Wolff's table.

Protein or body building foods (*e.g.*, the flesh of fish, birds and beasts, grains and pulses) contain iron in comparative abundance, but they are all poor in the alkaline salts of soda and lime.

Milk, cheese, eggs and lentils are the only protein food-stuffs that are rich in lime and soda salts.

Although pulses and grains have been classed as protein foods, they can as well be called carbohydrates, for besides protein they also contain from 49 per cent. to 76 per cent. of starch. These figures represent the amount of starch found in beans and rice respectively. Wheat contains 68 per cent.; oats, 58 per cent.; and lentils, 53 per cent. of starch.

Fat, butter, cream and manufactured sugar contain neither iron, soda nor lime.

Since flesh, grains, pulses, fats and manufactured sugar are lacking in soda and lime salts, they are known sometimes as the potentially acid foods.

Fruits, salads and vegetables contain iron, soda and lime in comparative abundance. They also contain vitamins, starch and sugar. The two latter substances are, as is well known, the energising food of the muscles—petrol of the body, so to speak.

For all these reasons fruits, salads and vegetables have been appropriately named the alkaline or health and strength giving foods.

Potatoes contain 20 per cent. of starch, but are very poor in soda or lime salts.

Cellulose, a substance so necessary for proper bowel activity in man and other animals with a long sacculated colon, is also an important constituent of fruits, salads and vegetables.

Now, when it is remembered that our meals consist chiefly of flesh, grains, pulses and potatoes—all food-stuffs lacking in soda and lime salts—it will be realised that it is our unwise manner of feeding that builds our predisposition to infections as well as other diseases. (Lahmann.)

The fact that numbers abstain from flesh foods does not affect the argument, as the absence of flesh from the diet usually means an increased intake of pulses and grains to make up for the withdrawal of the flesh food.

The limited quantities of vegetables eaten is usually deprived of the valuable alkaline salts by a wrong process of cooking. They are cooked with too much water, and this is thrown away along with the food salts that are dissolved in it. Fruits are considered a luxury and are only partaken of in small amounts and at certain seasons of the year only, or even avoided as injurious; whilst salads are rarely used at all because they give rise to cholera, enteric fever, dysentery, etc. This question will be dealt with later.

Is it any wonder, then, that our blood is lowered in alkalinity? And most of us suffer from time to time with colds and other bacterial infections, whilst not a few are chronic sufferers.

Regarding the dangers of eating salads and uncooked vegetables. First of all I would point out the fact that unless a fair amount of raw food is habitually eaten, the body is deprived of vitamins, for cooking destroys vitamins. Leonard Williams, Physician to the French Hospital, London, has an interesting article on this point in *The Practitioner* for May 1919, entitled "The Erect Posture." He says "Dietetic truth spells vitamins, and the judgment for destroying them is disease and death."

Secondly, experiments prove that gastric juice digests and destroys pathogenic organisms. But, as Pawlow has shown, a keen appetite or passion for food—psychical stimulation

and the satisfaction of thoroughly enjoying it, must be present for the most intense activity of the gastric glands. Therefore, the possibility of developing cholera, dysentery or enteric fever from eating salads and raw vegetables would never be present unless food is taken without a keen appetite. Indeed, I am quite certain that the great majority of those who develop these diseases got them from breaking the first law of digestion—"Good digestion waits upon appetite."

The common practice of eating to keep up the strength, when no appetite is present, not only introduces germs into the system, but it also builds a predisposition to infection. How? Lack of desire for food, as proved by Pawlow's gastric experiments, denotes suspension of power to digest. When food is not digested, it undergoes putrefactive or fermentative changes and the resulting acids are absorbed into the blood and its natural alkalinity is reduced.

Obviously, overeating (*i.e.*, taking more food than the digestive organs can properly deal with) is also a common cause of lowered blood alkalinity.

Herter, in his well-known book "Lectures on Chemical Pathology," tells us: "It has been found in dogs that after five days' fasting the action of the blood as a whole, and of the serum, against typhoid bacilli, was not diminished."

Surely, then, fasting until a keen appetite for a meal is present, far from being harmful, as is commonly supposed, actually does good. Especially when the remedy is combined with the use of saline purgatives. Fasting and elimination prevent acidosis, or pickling of the body, so to speak.

As a matter of fact, I have restored many cases of loss of appetite by getting the individual to fast until a keen desire for food returned, and when this event took place, not a few found that they had incidentally got rid of diseases that were troubling them.

Indeed, I make use of this valuable remedy in the treatment of *all* diseases. It is a general factor of cure, such as rest, a supply of moving air, and in surgery the principle of asepsis. The following record of its application in diphtheria and influenza may be of interest.

In the summer of 1909, I had occasion to treat twelve cases of diphtheria without antidiphtheritic serum, as there was some difficulty in obtaining it at the time. All the cases were clinically typical of the disease, and in each the Klebs Loeffler bacillus was found in throat swabs by an experienced bacteriologist.

The following was the treatment I adopted: Each man's tonsils, soft palate and pharynx were swabbed by myself three times a day with a saturated solution of sodii bicarb. and the men were instructed to gargle the throat with a

hot solution of sodii bicarb. gr. 25 to the oz. of water, frequently throughout the day. And gr. 15 of sodii bicarb. were taken internally three times a day.

A pint of very weak tea was allowed morning and evening, and between times as much water, toastwater or sodawater as they liked to drink.

Some went four days without nourishment, others longer; the longest period being seven days. In no case was any nourishment given until the temperature was normal and the tonsils, soft palate and pharynx were clear of membrane. Then three pints of milk were allowed daily, and each man was kept on milk for three to five days, after which ordinary food was allowed.

During the period of the fast, and whilst on milk, the bowels were moved freely each day by a large saline purge.

Every one of the twelve cases made an excellent recovery without any complications whatever and no sequelæ followed.

I have since tried the method on various occasions with the same excellent results, and I am certain of my facts when I state that cases of diphtheria thus treated are shortened in duration, and convalescence is more rapid and in all respects more satisfactory than when treatment is carried out on customary lines.

After all is said and done, why should a serum to increase protective substance be more necessary in diphtheria than in a virulent infection like cholera? The object of Sir Leonard Rogers's treatment for cholera is to increase the alkalinity of the blood, and that is exactly the aim of my treatment of diphtheria. And that it is effective is proved by my results.

As a matter of fact, lack of protective substance is not the trouble in diphtheria, cholera or any other infection, but the want of a suitable medium for protective substance to work in, and this is supplied when the blood is rendered alkaline by the appropriate means.

During the influenza epidemic last cold weather, twenty of my bad cases with high temperatures, headache, general ache and profound prostration, volunteered to try the fasting cure.

They lived on nothing but water, toastwater, sodawater or a little weak tea for four to six days; then appetite manifested itself and food was allowed. First, some vegetable soup and fruit. On the second day, toast and butter was given in addition. Later, some fish or chicken, with plenty of properly cooked vegetables, was added to the daily *menu*.

The only drugs used were administered during the period of fasting, when a saline purge was taken daily, and gr. 20 of sodii bicarb. three times in the twenty-four hours.

Within eight to ten days all these cases were fit and strong enough to return to their work;

and they all had excellent appetites for even the plainest of meals.

I was not so fortunate, however, with other cases of influenza who had text-book diet—milk, beef-tea, egg-flips, etc.—from the beginning of the disease. Few of them escaped the text-book complication—gastritis, bronchitis, pleurisy or pneumonia—whilst one got double pneumonia and died. Most of them were unfit for duty for two to three weeks and some very much longer.

For the prevention of influenza and other infections, the following was the advice I gave to the men who went through the fasting cure:—

(1) Never eat unless a really good appetite is present for a meal, and whether an appetite is present or not, don't eat between meal times.

(2) Cultivate the two-meal-a-day-plan of living. Preferably the no-breakfast-plan.

(3) Thoroughly masticate every mouthful of food—hard or soft—before swallowing it.

(4) Feed freely on fruits, salads and properly cooked vegetables, and eat sparingly of all other kinds of foods.

(5) Be very sparing in the use of manufactured sugar, common salt and condiments of all sorts. They force appetite and lead to overeating.

(6) Fully contract and stretch all the muscles of the body daily by systematised exercises.

(7) Get into the habit of taking in breath through the nose at all times and practise some respiratory gymnastics daily to keep the "vital capacity" high.

Lastly, remember that food makes the blood, whilst breathing and exercise circulates it, and hastens the elimination of impurities from the system.

Here I would like to discuss the value of a mask in the prevention of influenza and other air-borne infections. First of all, it cannot be worn at all times. People must eat, speak and will even continue to kiss. Secondly, Leonard Hill's researches show that the wearing of a mask is against the natural defensive mechanism of the mucous membrane of the respiratory tract.

The breathing of cool air—cool and therefore of low vapour tension—brings more arterial blood to the respiratory membrane. This increases evaporation from it and therefore the flow of lymph through it. The warm moist atmosphere generated by wearing a mask is against this natural washing and immunising defence.

To combat the influenza infection, Leonard Hill tells us: "The natural defence must be raised by the discipline of open air exercise, and by proper housing; until this is done the public will continue to be scourged by diseases, which kill, maim, and impoverish far more than the late war."

All this is most excellent advice as far as it goes, but it does not go far enough, as many have learnt from bitter experience. Just as epidemics rage amongst wrongly fed plants, so they rage amongst wrongly fed men; among the former we find diseases of carrots, potatoes, vines, etc. Amongst the latter cholera, diphtheria, cerebro-spinal fever, influenza and so forth. So until the food habits of the people are corrected there is no likelihood of a cessation of these periodical scourges.

As a step in the right direction, Public Health Officers might issue from time to time warnings on the dangers to health caused by an insufficient use of fruits, salads and vegetables. And in order to bring these valuable articles of food well within the reach of the poorer classes, Municipal Authorities could set into motion machinery for lowering the present high price at which these commodities are sold.

I now wish to go somewhat fully into the question of "Vital Capacity," allusion to which has already been made in the advice I gave to my influenza patients. As long ago as 1852, Dr. James Hutchinson, the inventor of the spirometer, showed that a high vital capacity was essential for a good standard of health, and that a decrease of 16 per cent. in capacity was attended by very indifferent health, and not infrequently denoted actual disease of the respiratory organs themselves.

Vital capacity varies with the height of the individual. The average for a man, 5 feet in height, is 200 cubic inches, and for every additional inch in stature there is an increase of 9 cubic inches in the vital capacity. That is to say, a person of 5 feet 10 inches in height should have a vital capacity of 290 cubic inches. Unfortunately Hutchinson gave no means whereby deficiency in vital capacity could be remedied.

That vital capacity can be increased when the appropriate means are adopted, I have proved in myself as well as in a number of my patients. As I possess records of my own vital capacity at the ages of 25, 39, and 53 it may be of interest if I give my own case.

At the age of 25 my capacity was 350 cubic inches, a figure considerably above the average for my height which is 5 feet 11½ inches. Here I may explain that the average only denotes what is usually found, but not what it might be. Well, to continue. I was the possessor of extraordinary good health in those days. When I reached the age of 39, however, my vital capacity had dropped as low as 200 cubic inches, and this, in spite of the fact that walking, tennis, riding, Indian clubs and Swedish drill movements formed part of my daily programme in health culture.

At the time of which I speak, I constantly suffered from violent colds in the head and sore throats. Headaches of a skull-bursting kind,

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which lasted for two or three days at a time, were also of frequent occurrence. My blood pressure was 150 mm. I got very easily winded, going up hill or a flight of stairs at a fair pace made me puff and blow like an engine. I was also troubled with chronic constipation, and had to take purgatives almost daily for relief.

Eventually I evolved a system of respiratory gymnastics whereby I brought my vital capacity up to 340 cubic inches—only 10 inches less than it was as a young man of 25 a little more than a quarter of a century ago. My wind improved beyond all recognition. The tendency to headaches, colds and sore throats disappeared and constipation was conspicuous by its absence, whilst my blood pressure dropped to 130 mm.

All these improvements in my health were simply and solely the result of an increase in vital capacity, which really meant a more vigorous circulation in the abdomen, thorax and respiratory tract, due to the increased mobility of the thoracic cage brought about by my respiratory gymnastics. The question of diet did not engage my attention for some eighteen months later, when a still further improvement was brought about in my physical well-being.

Details of my system of respiratory gymnastics will be found in my little book "Common-sense Breathing and Feeding." Not a few singers, runners, boxers and other devotees of athletic sports have made use of my exercises, and in practically every case an increase of vital capacity was brought about. And the increase was always accompanied by an improvement in the health of the individual.

All of which proves that singing, games and sports, good as they be, and are in some respects, do not by any means fully develop the flexibility of the thorax and the expansion and contraction of the lungs.

From some thirteen years now, I have used dietary measures, respiratory gymnastics and full contraction and stretching exercises for bringing about the cure of various chronic infections in my patients, and I can record a number of cures in long-standing cases of dysentery, malaria and pulmonary tuberculosis by these means alone.

Sir Almroth Wright, writing upon pulmonary tuberculosis in his work "Studies on Immunisation," says "the cure of bacterial infections depends neither on the storage of fat nor upon bronzing of the skin, nor yet upon the breathing of fresh air (seacoast air, country air, pinewood air, mountain air, or upon warm southern air), but only upon the destruction of the invading bacteria by the anti-bacterial substances in the blood."

I look upon chronic pulmonary tuberculosis as by no means a difficult disease to cure.

provided the patient is willing to follow faithfully the rules of feeding already given and will make the effort necessary to improve the circulation in the lungs by increasing the vital capacity, which is always very much lowered in this disease.

In a letter "Respiration and Pulmonary Tuberculosis" published in *The British Medical Journal*, 29th December, 1906, I showed that the difficulty of getting anti-bacterial substances to the apices and other affected parts of the lungs consisted in the fact that the circulation was poor round and about the diseased area, and the obvious remedy was to increase the flow of blood through the pulmonary tissues. And this could readily be done if we would only scrap much of the text-book teachings on the mechanism of respiration and learn to apply the new and sounder views on breathing expounded in 1903 by Arthur Keith, Hunterian Professor of Anatomy to the Royal College of Surgeons, England.

Many so-called cured cases of pulmonary tuberculosis relapse, because no serious effort has ever been made to remove the special predisposing cause of the disease—a poor vital capacity. The crude and clumsy sanatorium method of trying to improve vital capacity by graduated walking exercises and manual labour is very much on a par with the idea possessed by the man who had a piano which was out of tune and needed some adjustment, and so proceeded to try and put it right by playing on the instrument.

Numbers, having seen that sanatorium treatment and tuberculin is not a cure for the disease, are now turning their attention to drugs. Assuming for the sake of argument that a drug can be found that will kill all the tubercle bacilli in the body, I maintain that unless the special predisposing cause of this disease is removed by properly regulated respiratory gymnastics, patients will sooner or later become again infected, as it is clearly impossible to keep them wrapped up in cotton-wool for the rest of their lives, or rid the world of tubercle bacilli.

I think I have now said quite enough to show that our protective substance will successfully deal with bacteria of all kinds, if we only give it a proper chance to do so. And the proper chance, as we have seen, consists in keeping the blood alkaline and circulating it freely throughout the body by the simple measures already described, and, in some cases, the help of surgery.

I am certain that the general adoption of my views would result in enormous gain to the Government. It would simplify many of the problems of the Public Health Service, as well as those of ordinary medical practice. The health and physique of the people would be improved, and the tendency to disabilities which

are reducing the British nation to a C 3 standard, would be averted.

LIST OF REFERENCES.

- "Natural Hygiene," by H. Lahmann, M.D.
 "The No Breakfast Plan and Fasting Cure," by E. H. Dewey, M.D.
 "Auto-intoxication and Disintoxication," by G. Guelpa, M.D.
 "Defects of the present system of Respiratory Training of the Soldier" (*Journal of The Royal Army Medical Corps*, October, 1906), by R. F. E. Austin, Major, R.A.M.C.
 "Diaphragmatic Drill for the Improvement of the Wind and General Health" (*Journal of The Royal Army Medical Corps*, June, 1907), by R. F. E. Austin, Major, R.A.M.C.

TREATMENT OF FRACTURE OF THE PATELLA.

By F. F. STRUTHER SMITH,

CAPTAIN, I.M.S.

BEFORE dealing with the treatment of this fracture, I would like to give a short precis of the anatomical features of the patella. The patella is developed as a sesamoid bone in the tendon of the quadriceps extensor muscle. It necessarily follows that in front of and behind the patella there are fibres of the quadriceps tendon, also on either side of the bone the tendon of this muscle expands, covering the synovial membrane of the joint. Below, the tendon of the quadriceps becomes the ligamentum patellæ and is attached to the tubercle of the tibia. The pre-patellar bursa covers the lower part of the patella and the upper part of the ligamentum patellæ. In the kneeling position the weight of the body rests on the tubercle of the tibia, the ligamentum patellæ and the lower part of the patella. This explains why the patella is so seldom fractured when a person falls in the kneeling position as the tubercle of the tibia takes the brunt of the fall. Fracture of the patella is one of the commonest fractures produced by indirect violence—sudden muscular exertion on the part of the quadriceps extensor muscle, as produced by trying to save oneself from a fall when slipping on a piece of orange peel, or banana skin.

In this position the knee is semi-flexed and the upper part of the patella lies above the trochlear surface, and is unsupported, thus the common transverse fracture occurs. This position also explains why the fibrous sheath in front of the patella is more severely torn than that on the posterior surface.

By direct violence the patella is usually broken into many pieces and the fracture may be simple or compound. I recently operated on a case of patellar fracture. The X-ray photograph taken in the transverse plane showed only a simple transverse fracture with about one inch separation. On exposing the patella I found it was broken into six fragments. The upper half was in three pieces, and the lower half also. I do not propose in this paper to deal with compound fractures

because each case must be treated on its own merits, and according to the cause.

I am of opinion that all patellar fractures should be operated on, and that the fragments should be approximated and held in position by one of the various methods in use. As regards simple fracture of all other bones, I am one of those surgeons who never plate or wire a simple fracture unless a good result cannot be obtained by other treatment. In the case of the patella it is otherwise, because the tendency of the patella, being a sesamoid bone, is to unite by fibrous union. I think I may safely say that the common operative treatment for patellar fracture now-a-days is to bore with an awl two oblique holes in each half and bring the two fragments together with wire. I have found that the tendency is for the wire to cut itself free, and leave a short distance between the fragments.

The operative treatment, which I am about to describe, I learned from Lieut.-Colonel Henry Smith, I.M.S. In 1909 I was assisting him to wire the patella in the case of a captain in a Punjabi regiment. This officer fractured his patella three years previously and was treated by non-operative methods. The result was that he was passed unfit for active service as he had a separation of over six inches between the fragments. The fragments were brought together by making V-shaped cuts in the quadriceps extensor and held in position by the means described below. I may remark that this officer is now on active service in command of a battalion.

Since I saw this case operated on I have done about 12 others by the same method, and I am so pleased with the result that I venture to bring forward my small experience of it.

It is better not to operate immediately, but to wait for a week or ten days to allow the swelling to disappear, and the blood to be absorbed. The patient is prepared in the usual way and a general anæsthetic given. Great care must be taken as regards aseptic or antiseptic technique (I always prefer the latter), as the synovial membrane of the joint is often torn. A semilunar incision is made with the lowest part of the arc at the middle of the ligamentum patellæ. The upper limit of the lateral incisions must reach about one inch above the upper border of the upper fragment. This flap of skin and subcutaneous tissue is dissected up, leaving bare the patella ligament, the patella, and the lower part of the quadriceps extensor and the lateral expansions on each side of the patella. A layer of partially absorbed blood clot is usually found in front of the patella. This is removed and the line or lines of fracture exposed. The torn pre-patellar fibrous sheath is seen, and with a spoon the blood clot is removed from between the ends of the bone. Great care should

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be taken not to interfere with the post-patellar fibrous sheath, as by rough scraping the synovial membrane of the joint may be opened into. The post-patellar sheath is usually torn but the synovial membrane often escapes. Nothing being left between the ends of the bone the assistant brings the fragments together by pressure from above and below. The Surgeon, now using a large curved needle at least three inches long, and threaded with silver wire about as thick as will fit into the hole in the mouth-piece of a common pipe, inserts the needle through the middle of the ligamentum patellæ in the transverse direction, keeping close to the patella. A quarter-circle round the patella is completed, bringing the needle out still close to the bone. The needle is again inserted through the same hole from which it emerged and another quarter-circle completed—this time the needle coming out through the quadriceps. This is repeated until the needle is brought out where it first entered. The wire is now thoroughly tightened up and tied. In this way a complete circle of wire has been placed round the circumference of the patella. Care should be taken not to wound the synovial membrane of the joint with the needle. A few cat gut sutures are now put in the pre-patellar fibrous sheath and the lateral expansion, which is usually torn, and the wound closed up with silk-worm gut without a drain. I do not claim that this is a new method, or that it was invented by Col. H. Smith, but I think it is a true mechanical job in all fractures of the patella whether the fracture is single or multiple. In all the above cases bony union took place and fortunately no sepsis occurred in any of the cases.

A Mirror of Hospital Practice.

A CASE OF DABOIA POISONING.

By W. R. TAYLOR, M.B.C.S. (Eng.), L.R.C.P. (Lond.)

COMMENTS BY

F. WALL, C.M.G.,

LIEUT.-COL., I.M.S.,

Bangalore.

CASUALTY RETURN.

Station	...	Insein, Lower Burma.
Sex	...	Male, Burman.
Age	...	30.
Date and hour of bite	...	29th May 1919, about 7 p.m.
Hour of admission	...	About 9 p.m.
Part bitten	...	Outer side of dorsum of left great toe at the base.
Species of snake	...	Russell's Viper 36 inches without head.
Result	...	Cure CC-0. In Public Domain. Gurukul Kangri

Symptoms, Local:—

- | | | |
|--|-----|---|
| (a) Pain | ... | Intense and immediate. |
| (b) Swelling | ... | Immediate. |
| (c) Sanious oozing | ... | Only after incision. |
| (d) Appearance of cut tissue | ... | Edema and local discoloration over an area, the size of a 2-anna bit. |
| (e) Character due to mechanical causes | ... | One puncture only. |

Symptoms, General:—

- | | | |
|---------------------|-----|--|
| (a) Consciousness | ... | Stated to have been temporarily unconscious after reaching his house. |
| (b) Respiration | ... | Shallow and somewhat hurried. |
| (c) Syncope, Pallor | ... | Pallor marked, pulse 120, skin moist, cold and clammy, vomiting set in before admission and continued—see notes. |
| (d) Paralysis | ... | Nil. |
| (e) Hæmorrhage | ... | Vomiting of blood, subcutaneous hæmorrhage. |
| (f) Other symptoms | ... | See notes. |
| (g) Treatment | ... | Antivenene—see notes. |

CLINICAL NOTES.

29th May, 1919.—The patient was an intelligent English-speaking Burman Christian, living about three miles from the hospital. He states that he was bitten about six furlongs from his house. His companion cut off the snake's head and the body was brought to me. The Russell viper is well known locally and both men knew quite well what it was. The victim himself tied a ligature of cord round his leg, below the knee, and walked to his house. He was then brought to hospital, in a bullock-cart, by an old missionary lady of 80, who sat up with him all night and mounted guard subsequently to ensure rejection of the innumerable offers of remedies and charms brought by his visitors. It was therefore at least two hours after the bite that I saw him.

He was in very great pain, and the leg was much swollen up to the level of the cord. There was a small (2-anna bit size) area of discoloration around the puncture, but apart from a congested appearance, probably due to the ligature, no discoloration of the leg. He was sweating but his skin and extremities were cold; respiration shallow, 26–30; pulse 120, feeble. It was noticeable that in spite of the general condition and feeble pulse the superficial veins of the limbs were full. Pupils normal, and no sign of any paralysis.

I immediately injected 20 c.c. Kasauli anti-venene intravenously and 20 c.c. subcutaneously under the skin of the abdomen. I then made a crucial incision over the puncture and applied permanganate crystals. I did not consider this procedure likely to be of benefit, and it certainly increased the pain, but it was obviously expected of me. The incisions were superficial and the tissues,

except for the dark area mentioned, appeared to be merely oedematous. One c.c. pituitrin was also given. Vomiting occurred twice shortly after admission, the vomit consisting of blood and mucus only, about 4-6 oz. of blood on each occasion. It had also occurred several times before admission. The ligature below the knee was then removed and a tourniquet applied above the knee, a brief interval being allowed without appreciable effect. Half an hour later, although the pain was just as severe, the general condition was improved and the pulse considerably stronger. At 10 p.m. the condition was distinctly good, and no further vomiting had occurred. The tourniquet was now relaxed, and relaxation having no effect it was removed altogether. At 11 p.m., although no new symptoms had appeared, I considered his condition distinctly worse than it had been an hour previously and I therefore injected subcutaneously the remaining 20 c.c. antivenene. Within half an hour his condition had again improved very considerably, and about midnight I left feeling satisfied that there was no immediate danger. Adrenalin was held in reserve for any further hæmorrhagic symptoms, and calcium lactate, 30 gr. given by mouth and continued, t.d.s., to a total of 180 grs.

30th May, 1919.—*Morning, 14 hours after bite:—*

Temperature 99.4°, Pulse 120. General condition good, but pain still severe and patient had had no sleep. *Local condition:* considerable oozing from incisions, soaking through a thick dressing. Foot somewhat discoloured, swelling extends above the knee and is obviously increasing.

Evening, 24 hours after bite:—

Temperature 99.6°, Pulse 120. General condition good, still in great pain and restless, but no sign of onset of delirium or convulsions. Paraldehyde, one drachm, given.

31st May, 1919.—*Morning, 36 hours after bite:—*

General condition good and pain diminished, had a fair night. The leg and thigh are now enormous, and patches of subcutaneous hæmorrhage are seen, especially where ligature and tourniquet were applied. On the tense swollen leg the patches of discoloration resemble post-mortem staining.

The patient's condition subsequently gave rise to no anxiety, but the oedema extended over the lower part of the back and abdomen and discoloration appeared on the hip and gluteal regions.

He was discharged on the 13th day, his leg being still much swollen.

One other point of interest was noted by Mr. P. A. K. Chari, S.A.S. On the second day the patient begged for and was granted a cigarette, one inhalation from which was immediately followed by definite faintness. The

patient, however, was not convinced as to the cause and later in the day repeated the experiment, under close observation, and with the same result.

COMMENTS.

The antivenene was supplied to me twelve months before use, with a note to the effect that it was then one year old but had been kept in cold storage. Personally I am convinced that the antivenene saved the patient's life. It may of course be argued that he did not receive a lethal dose, and perhaps the fact that only a single puncture was found favours this view. On the other hand it cannot be denied that a Russell viper of over 36 inches can, and usually does, inject a fatal dose. Moreover, the improvement which followed the injection of antivenene on each occasion was very marked and cannot be attributed to any other cause.

The report on this case is exceptionally valuable as the snake that inflicted the injury was killed, and brought in. It was identified as a Russell viper by my old friend Colonel G. H. Evans, so there can be no doubt on this score.

The fact that so severe a degree of syncope was observed within two hours of the bite, coupled with the recurrent hæmatemeses which occurred even earlier, proves that a considerable dose of venom must have been discharged into the tissues.

I believe it is very unusual for hæmorrhages to appear so rapidly. I know of no case that proves the value of antivenene more conclusively.

It is dubious if calcium had any action in this case, or if the cessation of hæmorrhages was entirely due to the antivenene. It seems to me unlikely however that antivenene can restore to the blood its lost clotting power or repair damage to the intima. This is a matter that could be demonstrated in the laboratory. It is an important point to clear up in the treatment of these cases. It is conceivable that leakage from vessels might continue after antivenene had neutralised the venom in circulation, and the case might still be lost unless agents like calcium and adrenalin were made use of.

COLLOIDAL PREPARATIONS IN MODERN TREATMENT.

COLLOIDAL SULPHUR AND MERCURY IN SPECIFIC ARTHRITIS.

BY NAGENDRA NATH MUKERJEE, M.B.,

House Physician, Howrah General Hospital.

AMONG the diseases which give the physician a considerable amount of trouble by the absence of any marked response to ordinary treatment, as also by their tendency to chronicity, the various forms of arthritis play a most prominent

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part. It may be noted that most of these cases of joint affection are passed off as rheumatism and are uselessly stuffed with iodides and salicylates without any favourable result, and it is rather important to note that the most common form of arthritis prevalent among the working classes here is not rheumatism but gonorrhœal arthritis, and that true rheumatism is a thing which is very rarely met with. In fifteen cases, treated in the course of about three months, complaining of pain in joints, a definite history either of syphilis or of gonorrhœa, or of both, could be traced in twelve, and in all probability the want of any history or of evidence was the excuse for the rest. The joint affection is usually multiple: knees, ankles, wrist and sacro-iliac being those most commonly attacked, and all or any of them being present in any individual case.

The object of this note is to record the remarkably good results which have followed the administration of colloidal sulphur and mercury in cases of arthritis with a definite specific history.

Out of six cases in which it was tried, four of the patients gave a history both of gonorrhœa and syphilis, and in two the urethral discharge showed gonococci. Three of them had swelling of one knee and extreme pain in the sacro-iliac joint on walking. One had the sacro-iliac, the mandibular and the sterno-clavicular joint involved, together with a pododynia. He was passing blood by the urethra, and was one of the two showing gonococci in the discharge. Of the three with affected knee, one had partial ankylosis, and two had had the swelling for more than two months with considerable pain on movement. The administration of colloidal sulphur and mercury acted marvellously in more than one case, in so far that the patient (Case 5) with the partially ankylosed knee could walk about without much discomfort before the course was complete.

The preparation was used intravenously in all cases, the initial dose being four minims in each and increased ordinarily by two minims every other day; the usual course consists of six injections.

There was no reaction following the injection in all the cases tried except two. In these it consisted only in a slight rise of temperature and general discomfort with headache lasting not more than 48 hours. Each injection was followed, whether after reaction or not, by distinct signs of improvement in the condition of the joint as also in the general health of the patient. It is of course a matter for discussion how the thing acts on the arthritis, but it appears to have a distinct effect of breaking down fibrous adhesions in joints with sub-acute or chronic inflammation.

tion of specific origin. Whether it has any specific action on gonococci or spirochætes requires more careful study to explain. Below are given short notes of six cases of specific arthritis treated and cured.

Case 1.—Satish, H. M., 35, Calcutta: admitted on 4-3-19; pain in loin on movement two months. Urethral discharge shows gonococci.

6-3-19—Colloidal sulph. hyd.—m. IV intravenous.
8-3-19— " " " —m. VI " no reaction.
10-3-19— " " " —m. X " no reaction.
11-3-19—Pain less than before, feels more comfortable.
12-3-19—Colloidal sulph. hyd.—m. XV intravenous, no reaction, general condition better still.
14-3-19— " " " —m. XVIII, intravenous, no reaction, pain much less, walks about easily.
16-3-19— " " " —m. XX, intravenous, reacted with rigor, 102°.

Injections stopped. Absolutely free from any pain on 22-3-19; discharged cured on 27-3-19.

Case 2.—Gurudayal, H. M., 35, dist. Allahabad: admitted on 23-3-19; both knees swollen and painful, can walk with great difficulty, gonorrhœa 2 years, syphilis 1 year.

24-3-19—Sulph. hydrarg.—m. IV intravenous, no reaction.
26-3-19— " " —m. VI " "
27-3-19— " " —m. feels healthy, painless.
29-3-19— " " —m. X intravenous, no reaction.

Better; less pain on movement; patient went away before course was complete.

Case 3.—Mathura Kurmi, H. M., 39, Patna: admitted on 30-5-19. Multiple arthritis, syphilis, 5 years. Urethral discharge show gonococci.

31-5-19—1st injection.
2-6-19—2nd " no reaction.
4-6-19—3rd " no reaction, condition better.
6-6-19—4th " pain diminished, no reaction.
8-6-19—5th " better still, walks easily, no reaction.
10-6-19—Went away nearly cured before course was complete.

Case 4.—Ram Sunder, H. M., 35, Muzaffarpur: admitted on 25-3-19. Shoulder and loin, gonorrhœa 1 year, syphilis 3 years, injection commenced on 26-3-19, finished on 7-4-19, complaining of no pain anywhere on discharge.

Case 5.—Mir Kasim, M. M., 25, Howrah: admitted on 3-4-19; right knee swollen and painful, gonorrhœa and syphilis 2 years, partial ankylosis.

4-4-19—1st injection.
10-4-19—4th " "
14-4-19—6th injection, extension easier, less pain, can walk about.
18-4-19—Pain completely gone, can walk about easily, put on tonic and massage, discharged on 2-5-19 cured.

Case 6.—Panchanon Pal, H. M., 30, Hooghly: admitted 4-6-19; all joints affected, passing blood, extreme pain in loin on movement, gonorrhœa and syphilis 2 years.

4-6-19—Injection commenced.
8-6-19—3rd injection, much better.
10-6-19—4th injection, still better.

All pain practically disappeared, walks (slight pain), went away 12-6-19.

MALUNION IN A FRACTURED TIBIA, DUE TO THE TENDON OF THE TIBIALIS ANTICUS.

By D. J. HARRIES, M.D., F.R.C.S.,

CAPTAIN, R.A.M.C.,

Surgical Specialist, Ambala Brigade.

IN a thesis on "The growth and repair of bone in the human subject," submitted to the London University in March 1918, I endeavoured to lay stress on the influence of the surrounding tissues in determining the position and the amount of the callus formed at the site of a fracture. I also pointed out that the surrounding tissues are largely responsible for malunion, non-union, or the formation of a false joint between the fragments.

The case I am quoting in this article illustrates the truth of the above statements.

The history of the case is briefly as follows:—

The patient, Captain L. . . . m, aged 32, while motor-cycling on Armistice Night, 11th November, 1918, ran into a tree which had fallen across a part of the road. He was admitted into L. . . . e Station Hospital, where the usual methods of treatment with splints and extension were tried for about two months. On 19th January, 1919, I was asked to see the case. It was obvious, on examination of the leg, that in addition to considerable deformity, there was also no union between the tibial fragments. I decided that further non-operative measures were useless and had the patient transferred, on 24th January, 1919, to the Station Hospital at Ambala for operation.

Plate No. 1, taken on 26th January, 1919, shows—

- (a) Gross displacement of the tibial fragments,
- (b) Cross union between the lower tibial fragment and the fibular fragments,
- (c) Defective callus formation from the upper tibial fragment.

On 28th January, 1919, the leg was operated on and the fractured area exposed. I found the upper end of the lower tibial fragment feebly united to the fibular fragments. The fractured surface of the upper tibial fragment was completely covered over by the tendon of the tibialis anticus, which was firmly united to it by dense fibrous tissue. A spur of bone, shown in the first plate, arched over the tendon in front, and was probably instrumental in holding it down before firm union by fibrous tissue had been established between it and the bone.

I freed the tibialis anticus, excised all the fibrous tissue in the vicinity, together with the tibial periosteum, for about an inch on each side of the fracture, chiselled off about a quarter inch of the fractured ends of the tibial fragments, brought the ends into apposition and the fracture was fixed by two

steel plates, one on the external and one on the anterior surface of the bone. (See plate No. 2.) The incision was closed in the ordinary way and the limb bandaged and put up on a back-splint with a foot piece and two side pieces. Healing took place without any complications.

It is reasonable to assume that in this case the tendon of the tibialis anticus had got caught under the spur of bone mentioned above, and this had rendered the correction of the deformity by extension impossible unless the tendon had succeeded in slipping out from under the spur. The union of the tendon to the spur and the fractured surface soon did away with this possibility.

This union produced another interesting result, viz., the complete prevention of callus formation from the upper fragment; and this occurred in spite of the fact that the main nutrient artery enters the upper fragment a few inches above the site of the fracture.

Plate No. 2, taken on 17th February, 1919, shows the bone in good position. There is commencing callus formation between the fractured ends.

Plate No. 3, taken on 5th March, 1919, shows a slightly more advanced stage, but there is still ensheathing callus visible.

Plate No. 4, taken on 25th March, 1919, shows a layer of ensheathing callus on the external surface of the tibia and also a certain amount of bone formation in the region of the interosseous membrane, extending from the tibial to the fibular fractured surfaces. A faint outline of this can be made out in plate No. 3.

On 27th March, 1919, the patient was discharged on two months' leave. He was then able to bear a fair amount of weight on the limb, although he was not allowed to walk about without the aid of a crutch.

I wish to thank Lieutenant-Colonel Brian Watts, D.S.O., for permission to report this case, and Major Pierpoint, I.M.S., for kindly supplying me with the prints of the X-ray plates.

HOW A SNAKE CATCHES HIS PREY.

By K. ARDESHIR DARUKHANEWALA,

CAPTAIN, I.M.S.,

Medical Officer, War Hospital, Datta.

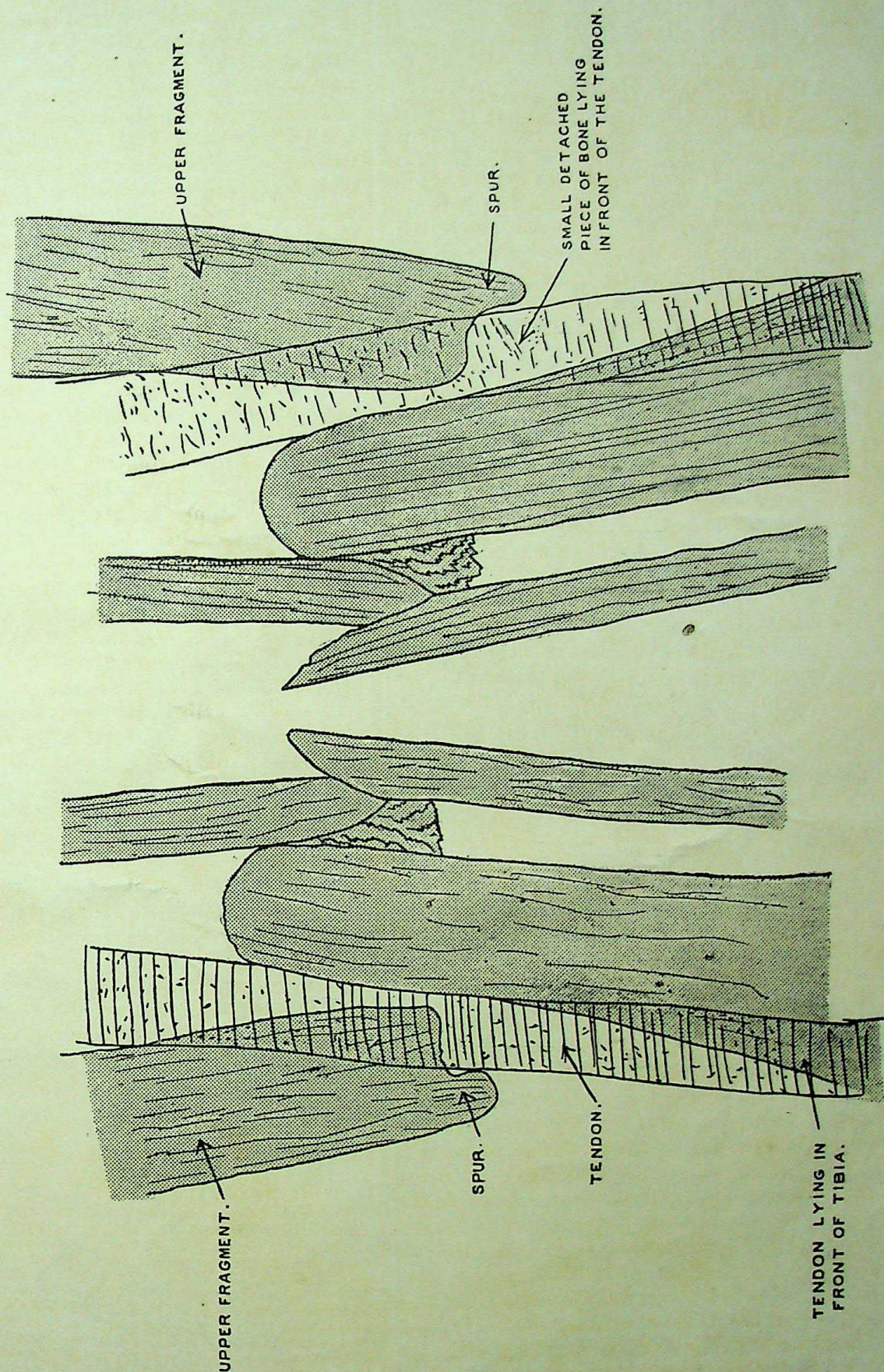
THE first of the accompanying photographs is of a common Brown Tree Snake (*Dipsadomorphus trigonatus*). The snake was seen at Indore running after a chameleon on a tree. As he approached his prey, he turned round as if to catch hold of it by the face and not from the opposite end. It took him about 18 minutes to swallow the whole thing. The snake was left undisturbed for half an hour. At the end of that time he was dropped down the tree and killed by means of chloroform. A post-mortem dissection shows how his prey was lying in the stomach. Mark that the digestion has already commenced at its head and part of it has been absorbed even in half an hour's time.

The second photograph shows how a snake catches hold of his prey and his mode of swallowing it. Mark the narrow ventrals, which clearly show the specimen to be a non-poisonous one, an *Eryzomys* or a Russell's earth snake.

MALUNION IN A FRACTURED TIBIA, DUE TO THE TENDON OF THE TIBIALIS ANTICUS.

BY CAPTAIN D. J. HARRIES, M.D., F.R.C.S., R.A.M.C.,

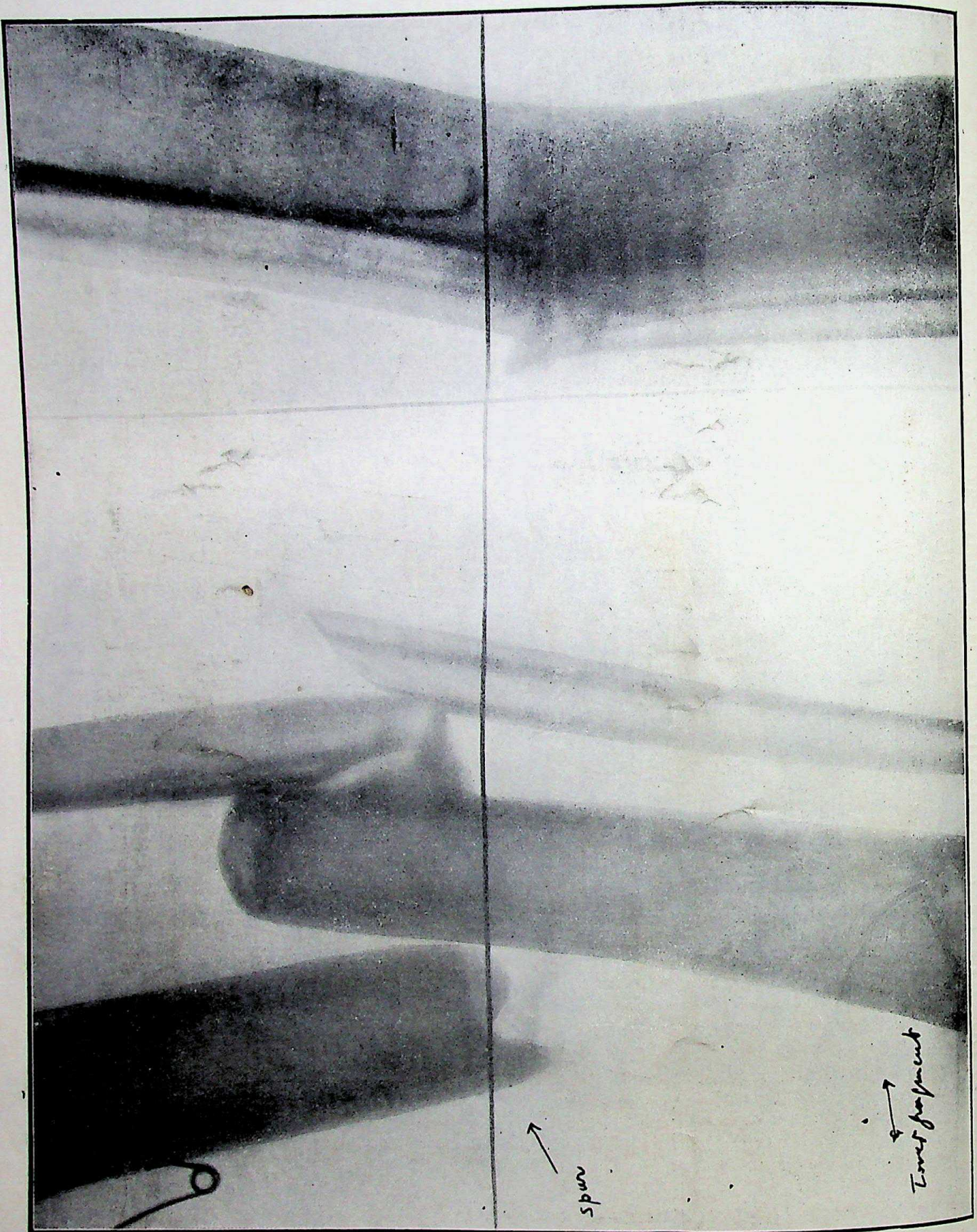
Surgical Specialist, Ambala Brigade.



As seen in the right leg of the patient.

Position of tendon of tibialis anticus in the reversed print.

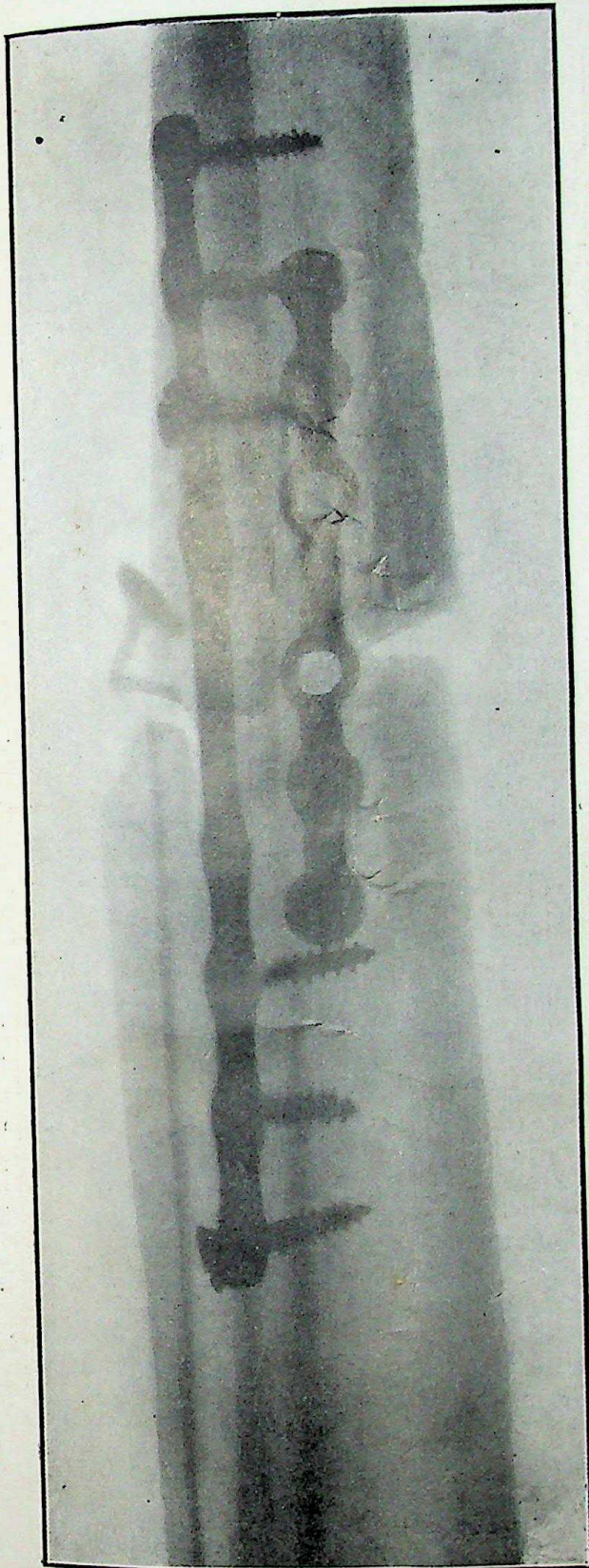
PLATE I.



LATERAL.

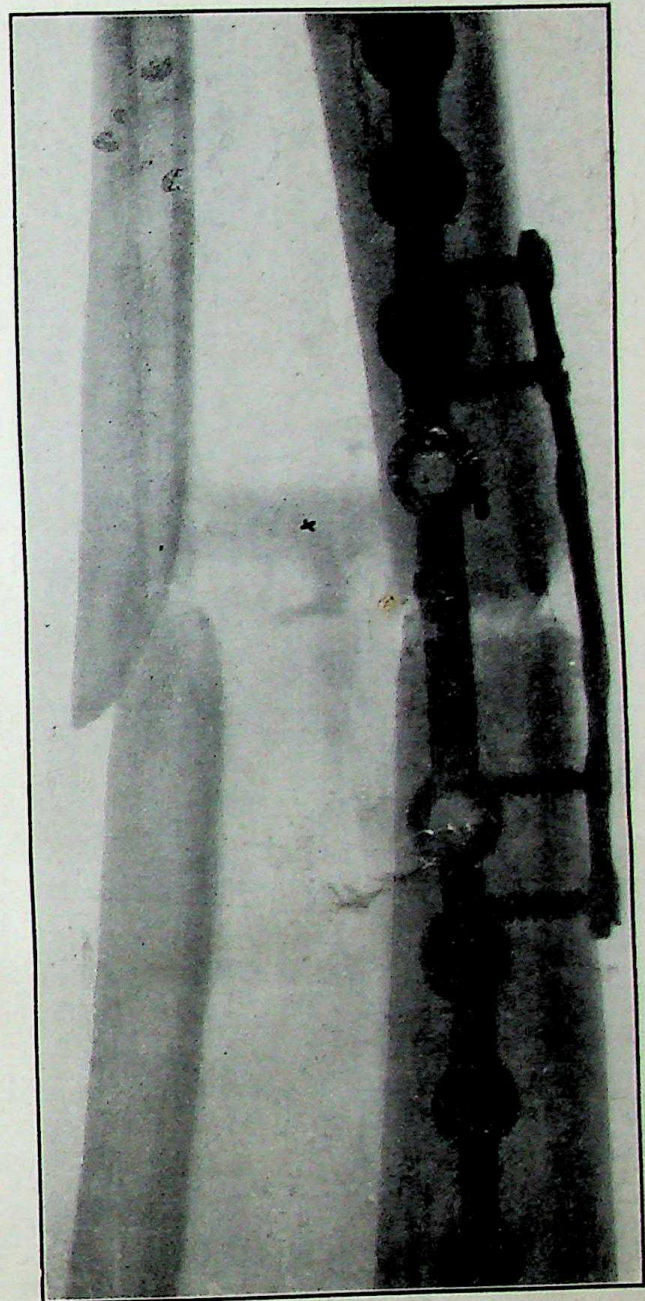
ANT. POST.
Showing the deformity present before the operation.
The tibia is removed, and no appearing to be L. sided.

PLATE II.



Taken on 17th February, 1919.

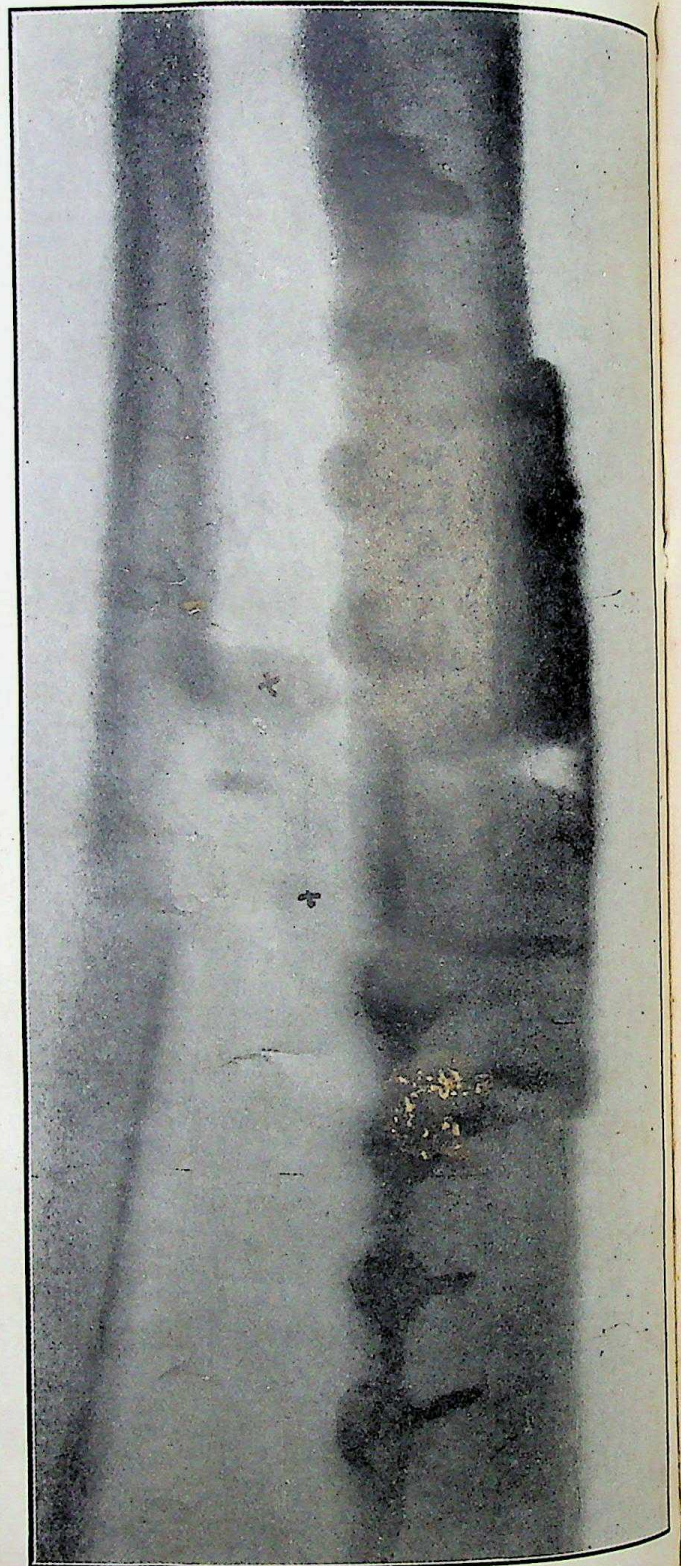
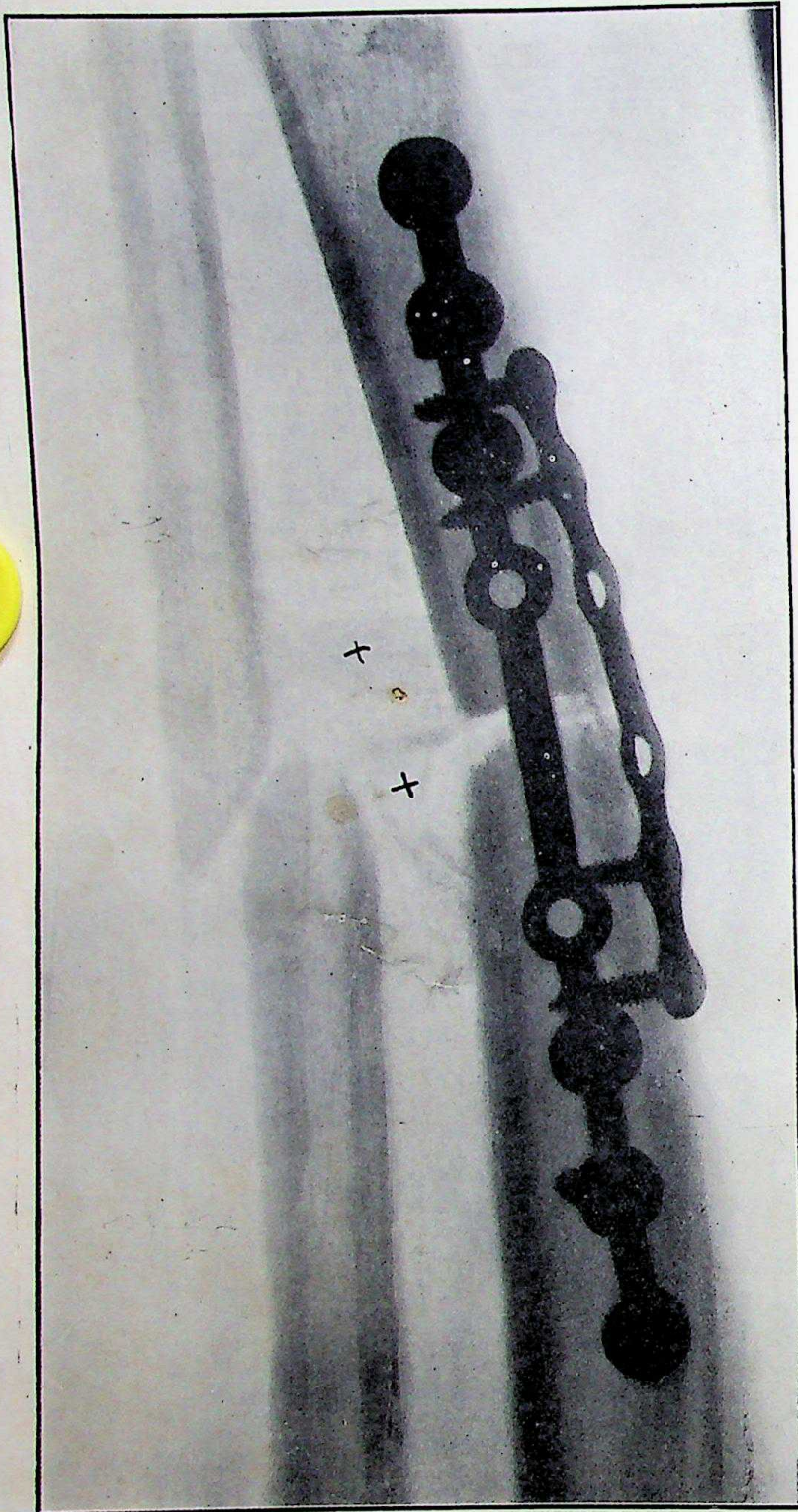
PLATE III.



Taken on 5th March, 1919.

New bone formation.

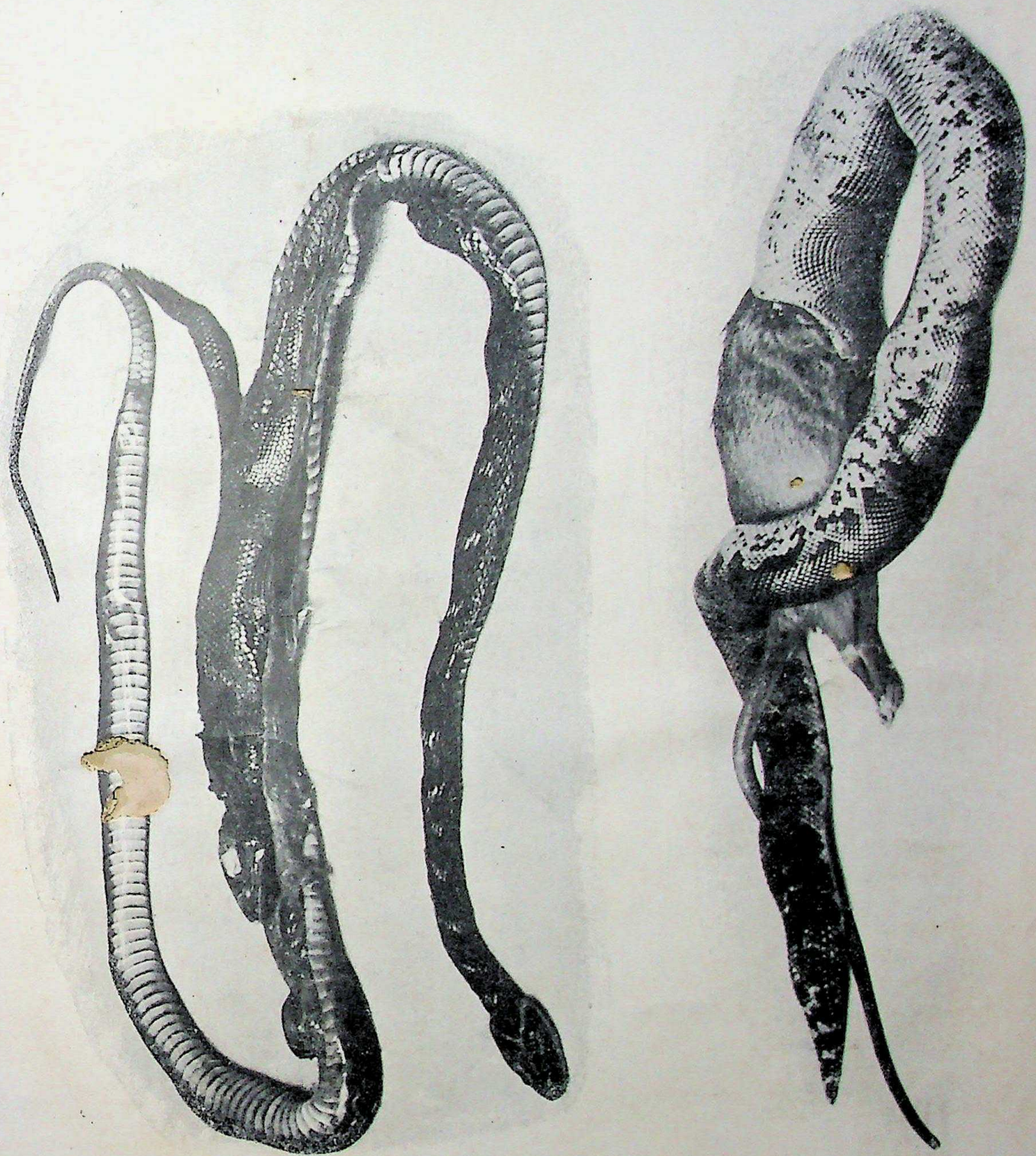
PLATES IV.



Taken on 25th March, 1919.
Showing position of new bone and ensheathing callus.

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By CAPTAIN K. ARDESHIR DARUKHANEWALA, I.M.S.,
Medical Officer, War Hospital, Dalia.



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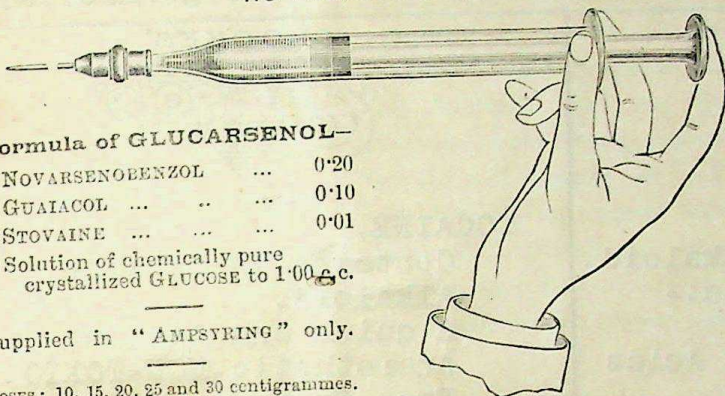
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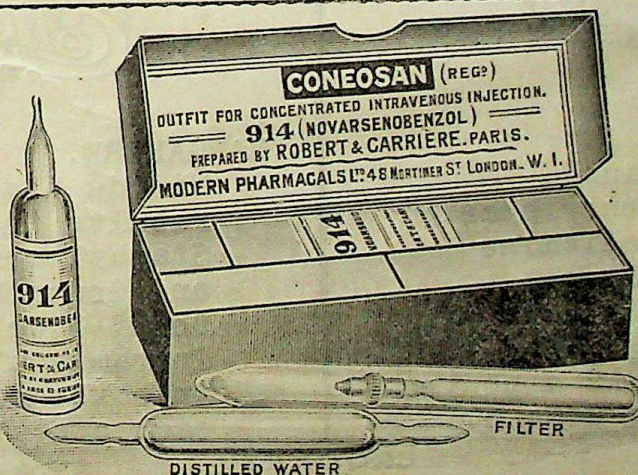
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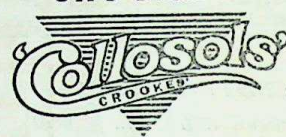
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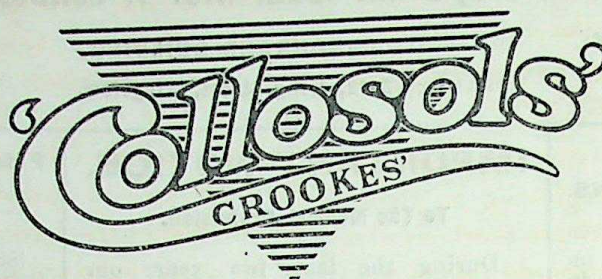
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(Vide Presidential Address, British Pharmaceutical Congress, 10th July, 1918.)

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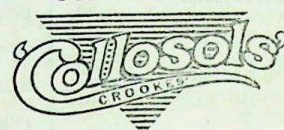
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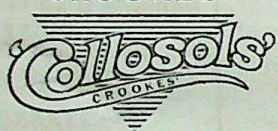
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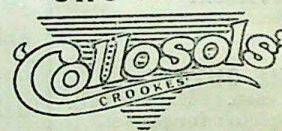
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Indian Medical Gazette.

SEPTEMBER.

"PROTEIN SHOCK" AND INTRAVENOUS VACCINE THERAPY.

THIS new method of treatment, which has emanated from America, is beginning to attract world-wide attention. The protein shock reaction is brought about by the intravenous injection of a "foreign" protein—that is, a protein not normally present in the human tissues. Many different substances may be employed, those most commonly used so far being emulsions of typhoid and coli bacilli, though a similar reaction may follow the intravenous injection of horse-serum, proteose, egg-albumen, red blood corpuscles of an animal of a different species, or certain colloidal metals, though in the latter case, it is probable that the protective suspension is at least partly responsible for the resulting phenomena.

It has been found from practical experience that bacterial emulsions containing the proteins of the coli-typhoid group are more efficacious in inducing the shock reaction than are those of other species, and therefore vaccines of coli and typhoid are more commonly employed. The bacillus coli apparently never fails when given in suitable doses.

The diseases in which benefit by this form of treatment has been reported fall into four main groups:—

1. Infective diseases in which the causal organism is unknown or not determined with certainty—such as rheumatic fever and acute arthritis of toxic origin.
2. Infective diseases in which the causal organism is known, but in which specific vaccine therapy is of little value, *e.g.*, gonorrhœal arthritis.
3. Infective diseases in which the causal organism is known, and in which intravenous vaccine is given for both its specific and shock effect, *e.g.*, typhoid, para-typhoid, and coliform infections of the urinary tract, etc.
4. Chronic disorders of unknown ætiology, *e.g.*, psoriasis, pemphigus, lupus erythematosus, and other skin diseases, such as lichen, eczema, and erythema induratum.

According to Cowie and Beaven, non-specific protein therapy has been successfully made use of in severe cases of influenzal pneumonia. These observers conclude, from a careful study of the effects of this method of treatment, that the intravenous injection of up to 500 millions dead typhoid bacilli is a safe procedure: that it is indicated in the early stages—up to the third day—of pneumonia: that it is contra-indicated when the myocardium becomes involved, or in acute endocarditis: that the immediate effect of the foreign protein is the development of a typical protein paroxysm, which is followed by a marked decrease in the temperature and a definite improvement in the subjective symptoms. Following the injection of the typhoid protein, there is a characteristic leucocytic movement, although in the cases studied there was only a moderate leucocytosis and no permanent improvement in the leucopenia ensued. In some favourable cases the intravenous injections of typhoid protein may bring about the termination of the acute symptoms in influenzal pneumonia in from one to three days.

Gow states in an interesting article in the *St. Bartholomew's Hospital Journal* that, within fairly wide limits, the size of the dose has but little effect on the severity of the reaction. A severe reaction may follow a dose of 50 millions dead coli bacilli in one case, and a mild reaction three to four times this dose in another patient. In order to effect the desired result it is necessary to produce a moderate reaction. The dosage in successive injections must be progressively increased so that a like train of symptoms may follow after each inoculation.

The reaction due to "protein shock," in the afebrile subject, from an intravenous injection of from 50 to 100 millions killed coli vaccine, takes the form, after three-quarters of an hour or so, of involuntary twitchings of the muscles of the legs. This may spread to the trunk and become general and last for half an hour. Before this rigor is finished the patient has intestinal discomfort, with nausea, and even vomiting; he has headache, usually frontal and sometimes pronounced.

Just prior to the onset of shivering the temperature begins to rise and continues to do so for about six hours. It commonly reaches 103° or 104° before returning to normal at the

end of twenty-four hours. Defervescence may be interrupted by a short secondary rise of a degree or so. The pulse frequency is increased during the reaction; the spleen may enlarge and the blood pressure after an initial rise commonly falls for twelve hours or so before returning to normal.

The intravenous injection of *Bacillus coli* vaccine causes an almost immediate fall in the white blood cells in which polymorphonuclears, lymphocytes, and large mononuclears are all early involved. Following a first injection the retreat of the polymorphonuclears from the peripheral circulation is extremely hurried, and, at the end of the first hour, they may be outnumbered by the lymphocytes. By the second hour signs of a rally may be evident, and by the fourth hour the pre-injection figure may be reached.

A rapid increase then takes place and a maximum of 20,000 to 30,000 is reached in about twenty-four hours. This rise is succeeded by a fall during the next forty-eight hours to the pre-injection figure or even below it. During the leucocytosis, myelocytes frequently appear, and normoblasts have also been met with.

After the second and third injections, the polynuclear leucopenia is of shorter duration, and the leucocytosis of more rapid development, though less sustained.

Many cases have been treated by this method by different observers and on the whole very favourable results have been reported. Thus, Cecil reports forty cases of rheumatic fever, acute toxic arthritis and gonorrhœal arthritis, which were subjected to this form of non-specific therapy. The rheumatic fever cases did well, about 40 per cent. recovered completely, in from two to ten days. Seven patients with gonorrhœal arthritis showed temporary improvement for twenty-four hours, and then the joint-pains returned. Other observers record similar results.

Acute diseases other than different forms of arthritis have been treated—in some cases satisfactorily—by the intravenous injection of typhoid vaccine. In typhoid fever itself, both sensitised and non-sensitised vaccine have been used by several workers. Gay summarises their results and adds ninety-nine cases of his own, which show a mortality of 6.6 per cent., and thirteen complications.

He states that the milder cases react better than the more severe, but even the more severe will in many instances be benefited, and even aborted. The disease was aborted in one-third of the cases in his series, benefited in another third, while in the remainder it was unaffected. The liability to complications appeared to be diminished, but as a means of preventing relapse the injections are of little value.

Typhoid vaccine has also been administered intravenously in the treatment of lobar pneumonia and other acute infections. Gow has employed an autogenous *coli* vaccine intravenously in the treatment of subacute pyelonephritis with good results. One case of two months' duration showed a tender swelling in the right renal region, pyrexia, and 10 per cent. of pus in the urine. After four injections the urine became free from cells and bacilli, and was still sterile when examined two months later.

Gow also records a very successful result in a very severe case of broncho-pneumonia treated with an intravenous vaccine. The vaccine was prepared from the sputum of the patient and the germ was indistinguishable from the Pfeiffer bacillus. A dose of seventy-five million sensitised auto-vaccine was given intravenously fourteen hours after the onset of the signs and symptoms suggestive of broncho-pneumonia, his temperature at the time being 103.8°F . An hour later the temperature was unchanged, but after two hours it had risen to 105.4°F .; yet there had been no chill, and he antedated the statement that his headache was gone, his chest was more comfortable and that he felt much better. Four hours after the injection the temperature had returned to 103.8°F .; it continued to fall by lysis, being subnormal in seventy-two hours. The sputum remained blood-stained for twenty-four hours after the injection, then it became more copious and purulent, and the pneumococcus appeared to be the predominant organism. Cough persisted for several days, and the signs in the chest slowly cleared.

Cadbury (*China Medical Journal*) gives a record of the treatment of various diseases by the injection intravenously of old typhoid vaccines. He treated arthritis, rheumatic fever, chronic arthritis, gonorrhœal arthritis, syphilitic arthritis, neuralgic pains of all sorts, psoriasis, lichen planus, eczema, and erythema induratum, in

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CURRENT TOPICS.

this way, and speaks favourably of the effects.

We draw attention to this new line of treatment in the hope that it may be found of value in the various unknown fevers and infections met with in India, and also, that it may prove beneficial in many diseased conditions, whose cause is known, but in which the treatment is unsatisfactory. Some cases are at present being treated by this method in the wards of the Medical College Hospital, Calcutta. If the intravenous injection of dead bacilli or cocci could be made to give a sustained leucocytosis, it would appear to be the ideal method to employ in the treatment of kala-azar and diseases in which a leucopenia is an outstanding feature.

Current Topics.

VITAMINES.

The word "vitamine" is not as old as the present century, and however objectionable it may be in itself, it seems to have obtained a permanent footing in medical literature. It is certainly less cumbersome than the expression "accessory food factor" which has been suggested as a substitute. The actual word employed is after all of small moment; the important point is what it connotes. It is a matter of everyday physiological knowledge that our bodies are built out of proteins, fats, carbohydrates, salts and water, and that these substances must be taken in certain proportions and in sufficient quantity to repair the body waste, and furnish the energy necessary for its activities. But recent research has shown that these substances alone are incapable of maintaining life. Something else is required, the chemical nature of which is at present unknown, and it is to these unknown but indispensable substances that the term *vitamine* has been given.

Professor Hopkins of Cambridge, a pioneer in this branch of research, has suggested a useful simile to help us to understand the problem. He compares the building of the body to the building of a house; the essential bricks or blocks of stone of which the walls of the house are composed would be of comparatively little use unless mortar or cement was also supplied to unite these components together, and it is the cementing material which he compares to the *vitamines*. It would be dangerous to press the analogy too far, for the exact rôle of the *vitamines* is still hidden from us, but the simile is a useful one to indicate one way at least in which they can render the important building stones of real service, and it is accurate in a quantitative sense. The mortar in the walls of a house makes up but a small proportion of the structure; it is exactly the same in the case of the *vitamines*—they bear but a small proportion to the total food supply. When they are withheld from the food, as when chemically pure proteins, fats, carbohydrates, salts and water are administered, health deteriorates, in young animals growth ceases, and if the treatment is continued, death is the inevitable result. Health can be at once re-established if the diet is amplified by adding to it a natural food, such as a small amount of milk, for foods as they occur in nature contain the accessory factors necessary for growth and

maintenance. The foregoing statements are common-places to the modern physiologist, but to the practising medical man they may be new, and I trust to show they are important practically. So many are the treated, purified, and sophisticated foods at present on the market, that it is most important to the dietician to remember that those are but poor substitutes for the foods which are made in nature's laboratory.

Although biochemists have not yet got so far as to be able to state what is the chemical structure of these *vitamines*, research has, at any rate, progressed far enough to make it certain that they are numerous, and it is around three of them that research has mainly centered. They are products of the plant world, and it is on plants that all animals ultimately live. Animals have greater synthetic powers than was formerly believed to be the case, but, so far as is at present known, they are not able to synthesize or manufacture *vitamines*. The *vitamines* can be separated by their varying solubilities in water and other agents, they can be distinguished by their varying powers of resistance to heat and other drastic agencies, and, further, they are differently distributed in various parts of the vegetable world.

Their absence prevents healthy growth and leads to death, but the symptoms manifested are different in the three cases. The diseases due to their absence are very conveniently grouped together as "deficiency diseases." Among such diseases are *beri-beri*, *pellagra*, and, coming nearer home, *scurvy* and *rickets*.

The first of these *vitamines* is contained in the embryo or "germ" of cereal seeds. When milling is carried to a high degree this portion of the grain is removed, hence polished rice and superfine white wheat flour, though they may appeal to the æsthetic sense, are of inferior value as foods. It is now firmly established that *beri-beri*, the disease of the rice-eating nations, is due to the use of polished rice, and can be prevented or cured by adding the polishings to the diet. Polished rice produces the disease not because it contains a poison, but because it lacks the *vitamine*. Using the non-committal nomenclature introduced by American physiologists, it is now usual to speak of this *vitamine* on account of its solubility in water, as "Water-soluble B."

The second is contained in the majority of animal fats (lard is an exception), and is particularly abundant in milk fat, and in certain fish oils such as cold-liver oil. It is specially important as a growth factor, and therefore indispensable in early life. It is absent in vegetable fats. Here we have one more indication of the value of milk for the young, an explanation of the potency of cod-liver oil in curing malnutrition, and a warning of the danger of vegetable margarines if employed as the only source of fat in the food of the growing section of the population, or of expectant mothers. It is usual to dub this *vitamine* "Fat-soluble A." There is accumulating evidence to show that its absence or deficiency is an etiological factor in *rickets*. Like its water-soluble companion, it is ultimately a vegetable product, and is contained in high concentration in the green portions of plants.

The third *vitamine* is also soluble in water, and as Dr. Drummond suggests, it may be called "Water-soluble C." This is the antiscorbutic principle, and is found in the juices of fruits (the orange and lemon are here pre-eminent) and in most edible vegetables. It is characterized by its extreme lability, being destroyed by moderately high temperatures, treatment with alkali, by desiccation, canning processes, and the like. Hence arises the value of fresh fruit and vegetables in the prevention of *scurvy*.

The object of this article, however, is not so much to indicate to the practitioner the elementary principles of our knowledge of the *vitamines*—that could be accomplished by the perusal of any recent book on physiology or scientific dietetics—but to go a little further, as a result of reflection and study of the subject. An appreciation of the main fundamentals is, however, necessary

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increased to 8 lb. but by this time we were face to face with the problem of treating a heavily infected population.

In 1917 and 1918 the quinine supplies have had to be increased enormously, and special measures introduced to see that all malarial cases and contacts are properly dosed, but this malarial outbreak is now a serious fact. The saving of a few hundred rupees in quinine expenditure has entailed an enormous loss in labour, efficiency, and the actual number off duty is causing a serious diminution in the power to supply coal.

The Medical Officer reports the daily average sick for the three months 1st September, 1917, to 1st December, 1917, as being—

Date of week ending	Daily average number from all causes.	Daily average number from malaria.
For 1917.		
1st September	227.7	171.7
8th "	234.0	146.4
15th "	208.4	126.4
22nd "	185.2	135.1
29th "	164.2	112.2
6th October	161.7	71.7
13th "	169.7	101.0
20th "	185.5	139.4
27th "	149.0	120.2
3rd November	148.8	96.1
10th "	178.1	121.4
17th "	248.2	186.8
24th "	268.1	209.5
1st December	278.7	193.2
For 1918.		
7th September	98.0	23.0
14th "	92.7	19.4
21st "	93.1	24.7
28th "	127.7	21.4
5th October	214.8	28.5
12th "	159.5	19.2
19th "	131.8	29.8
26th "	130.5	16.1
2nd November	88.5	11.2
9th "	93.0	16.7
16th "	78.8	14.7
23rd "	79.7	11.2
30th "	98.4	16.4
7th December	73.1	15.0

As a second explanation—I suggest that these coal-fields are gradually being dropped as they are worked out, and the broken surface resulting is, in the rains, providing much more ample breeding grounds for the anopheline mosquito.

The Giridih collieries are situated on an estate of 4,000 acres, of which large areas have been worked out and have dropped.

With reference to this second explanation I would like to draw your attention to the conditions obtaining at Raneegunge.

This is a worked-out area and malaria is here so serious that almost every person we examine harbours malarial parasites in the blood. In the worked-out portion the land has been dropped and malaria clings almost entirely to this area, whereas the town portion, where, although worked out, the surface could not be dropped, remains an island with a comparatively small malarial infection.

Thirdly, the village surroundings at Giridih were not kept as free from jungle as they should have been, and clearing work has been carried out with vigour and success, drainage is looked after, and the village sites are now clean and dry.

The following is extracted from a circular issued for the guidance of our staff:—

		Grains.
"Treatment of a malaria case will be 10 grains of quinine in solution four times a day; for 4 days, 40 grains x 4		= 160
Every Sunday and Wednesday for 4 weeks		= 320
Every Sunday for 4 weeks		= 160
Each case requires		(Total) 640
Children in proportion."		

This system of treatment is in general use on the East Indian Railway and it seems to keep the staff very free of malaria as compared to the surrounding population.

The pills quoted as being issued to District Officers are, three grains of sulphate of quinine made up with glycerine, acid tartaric and gum tragacanth, in the East Indian Railway Medical Depot; last year the issue for a staff of 135,000 and 400,000 families was 465,500 pills and in 1918, 488,226. This is in addition to the general treatment undertaken by our medical staff. We make a practice of always giving quinine in the afebrile stage after food.

Although the intention was to dose all sick and contacts, actually very little was done beyond the dosing of the fever cases. It was further found much easier to get hold of the men than the families, and this was also the case all through the years of quinine shortage.

The enquiry proved that for all practical purposes quinine was, during 1913 to 1916, inclusive, used for the treatment of the men, and was not sufficient for them, the men's sickness therefore gradually increased but not to the same extent as that of the families.

During 1917 vigorous treatment of the men has brought down their sickness, and the less completely treated and more heavily infected families have not had their sickness reduced to the same extent, although a marked reduction has been obtained.

As a result of the increase in the family infection, there was of course an increase in the liability of the men to be infected, and one can see that their line of sickness follows, but a long way behind, the sickness line of the families, still please remember that all the time they, the men, were receiving more treatment and their sickness was therefore better under control.

Further efforts during the next two or three years will, it is hoped, bring back the malaria sickness to something lower than what we may consider the normal years of 1909 to 1912, inclusive.

With regard to the comparative cost of the universal small dosage and this method. Universal dosage would have cost us 1½ lakhs of rupees or such portion of this as we were able to expend by forcing quinine down 16,000 unwilling throats.

Our method has cost us 30 lb. of quinine, which at Rs. 35 per pound amounts to Rs. 1,050, and we have with half of this dosed and cured about 500 sick and used the other half as prophylactic dosing of contacts and potential cases.

BLOOD TRANSFUSIONS.

In the *Journal of the American Medical Association*, June 7th, 1919, Lindeman gives details of his "syringe cannula" system of transfusions and claims to have had 215 consecutive cases without a rigor.

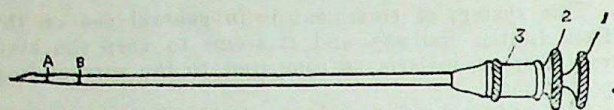
The entire apparatus consists of six syringes (20 c.c.), two tourniquets, and two sets of cannulae, one for the donor and one for the recipient. The cannulae telescope one within the other. The innermost is a hollow needle. The proximal ends of the inner and middle cannulae are

capped with ordinary stationary thumbscrew caps. The proximal end of the inner cannula is capped with a receiver to fit a Record syringe.

The innermost cannula is $2\frac{6}{16}$ inches long, the middle $\frac{3}{16}$ inch shorter, and the outer $\frac{3}{16}$ inch shorter than the middle.

When ready for use there are two joints, A and B, behind the point of the needle thus:—

FIG.



The syringes are sterilised in 95 per cent. alcohol for ten minutes.

OPERATION.

The operation requires two operators and a nurse. A table is placed between the donor and recipient and, on the table are placed three basins containing normal saline solution. After use each syringe is rinsed out in each one of the three basins before being used a second time. The last basin should remain free from blood throughout the operation.

The compound needle is introduced into the recipient's vein, the inner cannulae withdrawn and replaced by an obturator, and the tourniquet removed. The donor's vein is then punctured in a similar manner, a syringe of blood withdrawn, placed on the table, and a second syringe attached. The operator on recipient picks up the full syringe, removes the obturator from the cannula, and injects the blood—handing the syringe to the nurse when empty. Meanwhile a second syringe has been filled, which he picks up and again empties into the recipient's veins.

Having rinsed the syringe the nurse places it beside the operator on the donor. In this way one syringe of blood follows another in rapid succession until the desired quantity has been introduced.

Each syringe of blood is outside the body only from 6 to 10 seconds.

The writer contrasts his results with those obtained by the citrate method, and concludes that sodium citrate produces changes in the blood, or allows such changes to develop. Hence we get chills and reactions, and possibly sensitization of the patient to further injections.

He claims:—

- (1) That the blood passes through the minimum amount of foreign material.
- (2) There is no blind system into which air may leak.
- (3) There are no rubber tubings, stopcocks or valves around which blood may clot.
- (4) No anti-coagulants and no foreign material are introduced into the patient.

SOME CLINICAL DISORDERS OF THE HEART'S ACTION.

LIEUTENANT-COLONEL G. D. MAYNARD, S.A.M.C., in the *Medical Journal of South Africa*, Vol. XIV, No. 9, April, 1919, gives an account of some clinical disorders of the heart's action.

Attention is first drawn to the physiological mechanism of the heart's action. Normally the stimulus for cardiac contractions arises in the sino-auricular node at the junction of the superior vena cava and right auricle. This node has been termed by Lewis the "Pace-maker." The irregularities due to its disturbance are known as the "sinus-arrhythmia," which are characterised by an unaltered time relation between the auricular and ventricular systoles.

From the sino-auricular node the stimulus spreads through the auricular wall to the auriculo-ventricular node, situated under the septal segment of the tricuspid valve. From this point the stimulus is propagated to the ventricles through the auriculo-ventricular bundle of His. Disease of any part of this bundle leads to partial or complete heart block.

These conditions are usually investigated by means of polygraphic tracings taken with Mackenzie's polygraph.

FIG. 1.

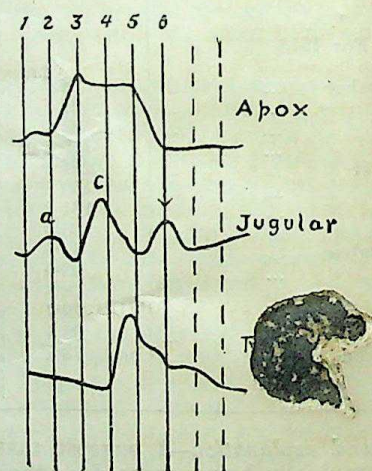


Fig. 1 above gives the true relations of such a series of tracings with a pulse rate of 75 per minute, so that the complete cardiac cycle occupies 8-10ths of a second. One is the commencement of the auricular or "a" wave of the venous curve, and when the auricular wave is present in a cardiac tracing its position is the same; at two, 1-10th of a second later, the summit of the "a" wave in the venous curve and the commencement of the ventricular wave in the apex tracing is observed; at three, the summit of the upstroke of the ventricular systole occurs, being synchronous with the opening of the aortic and pulmonary valves; it also corresponds to the commencement of the carotid or "c" wave of the venous pulse. Four, exactly 1-10th of a second after 3, is the

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commencement of the radial pulse. At *five*, the downstroke of the apex tracing commences and corresponds in time to the closure of the aortic and pulmonary valves. At *six* are seen the end of the ventricular downstroke in the apex tracing, the summit of the ventricular or "v" wave in the jugular pulse and the dicrotic notch of the radial pulse. It corresponds in time to the opening of the auricular-ventricular valves.

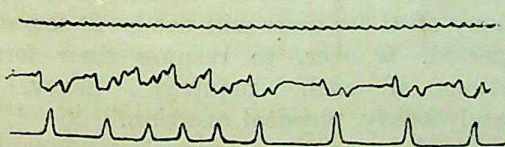
Normal increase in the cardiac rate does not materially alter the relative positions of these waves, except in so far as it shortens the diastolic period and thus brings the succeeding "a" wave nearer the "v" wave of the previous cycle. From one to three in the venous tracing, normally 1-5th of a second, is known as the "a-c" interval; when increased it indicates some delay in the propagation of the stimulus for contraction from the auricle to ventricle and is thus a sign of partial heart block. As it is usually most convenient to record the radial pulse with the jugular, the lines 3 and 6 are of most importance, as they enable two of the jugular waves to be definitely located, three being situated 1-10th of a second before the commencement of the radial pulse wave and corresponding to the start of the carotid wave in the venous tracing; and six situated in the dicrotic notch of the radial curve, corresponding to the summit of the ventricular wave in the venous tracing.

Various forms of irregularity are then described:

1. Sinus-arrhythmia.

(a) *Respiratory type*.—This form is common in the child, adolescent, and young adult, the true relations of the contractions of the auricle and ventricle are unaltered and the "a-c" interval is not affected by deep breathing, the beats increase in intensity on inspiration and decrease on expiration.

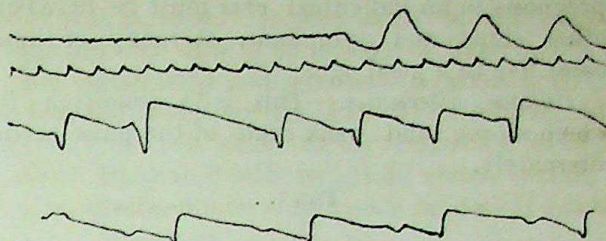
FIG. 2.



Any cause which increases the heart beat, such as fever, excitement or exertion, may cause it to disappear. Though common in cases of "effort syndrome" most authorities declare, it is not of evil import.

(b) *Phasic sinus arrhythmia*.—Here again the contractions follow one another in a normal manner. The "a-c" interval remains normal. Variations in the strength and duration of the beats occur in a rhythmical way every 10 to 15 seconds. Such variations are not influenced by respiration and occur when the breath is being held (Fig. 3).

FIGS. 3 & 4.



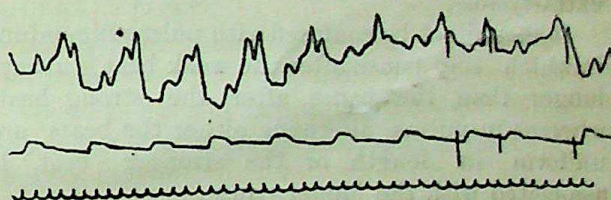
This irregularity is a prognostic sign of some gravity.

2. *Extra-systole (Premature-systole)*.—(a) *Ventricular type*.—The unusual stimulus arises in the ventricular wall. The extra-systole may or may not produce a wave in the radial pulse. In either case the distance between the two normal beats which enclose the abnormal is exactly equal to that of two normal beats. In other words, the compensatory pause is complete (Fig. 4).

If the extra-systole takes place so early in the diastole that the next regular beat is not dropped, the condition is known as "interpolated extra-systole."

(b) *Auricular extra-systole*.—In this case the abnormal contraction arises in the wall of the auricle. In the venous tracing a premature "a" wave will be seen with the "c" wave following it. The compensatory pause is incomplete, so that the distance between the two normal beats which enclose the extra systole is less than that of two undisturbed normal beats.

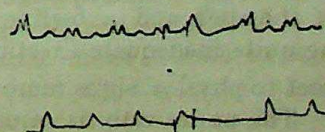
FIG. 5.



If auricular extra-systole occur in groups, a condition known as paroxysmal tachycardia is developed; or if the auricular contractions are of extreme rapidity, the condition is termed auricular flutter.

(c) *Nodal extra-systoles*.—The stimulus in this case arises in the auriculo-ventricular node and both ventricle and auricle contract simultaneously. As the blood cannot pass into the ventricle, a large "a" wave is produced in the veins and the "a" and "c" waves are super-imposed.

FIG. 6.

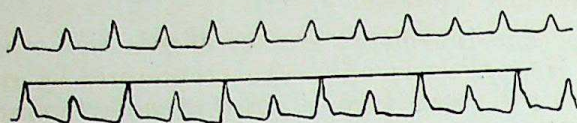


The prognostic significance of extra-systoles is of importance on account of the anxiety it gives

rise to on the part of the patient; but the prognosis in an individual case must be based on other signs and symptoms, as many of these cases live to a good age.

Pulsus alternans.—This is a condition in which strong and weak beats of the pulse occur alternately.

FIG. 7.



It is sometimes seen in cases of auricular flutter; but, apart from this condition, it is of paramount importance on account of its grave prognostic significance. It appears always to indicate a serious myocardial lesion. Lewis says, "alternation of the pulse belongs to a small group of phenomena witnessed by those who attend the sick, which, treated as isolated signals, are in themselves emphatic and portentous . . . it is the faint cry of an anguished and fast-failing muscle, which, when it comes, all should strain to hear, for it is not long repeated."

This condition occurs chiefly in elderly people of the male sex, and can usually be diagnosed from a radial tracing.

Sir J. Mackenzie writes: "The pulsus alternans need not be present in any marked degree, for some of the most speedily fatal cases have only shown its presence for one or two beats after an extra-systole."

It should not be confused with pulsus bigeminus in which the pause after the weak beat is always longer than the pause after the strong beat, whereas in pulsus alternans either the beats are uniform in length or the stronger beat is associated with the longer pause.

THE EFFORT SYNDROME.

From the *Medical Journal of South Africa*, Vol. XIV, No. 8, March 1919: Lieutenant-Colonel G. D. MAYNARD, S.A.M.C.

THE term "effort syndrome," introduced by Lewis, includes such disorders as soldier's heart, D. A. H., and the neurocirculatory asthenia of American writers.

The symptoms of a typical case are: shortness of breath on slight exertion; palpitation on excitement or exercise; a dull stabbing pain in the region of the apex, and a feeling of exhaustion following quite inadequate exertion.

With respect to physical signs more variability is met with. The pulse rate is usually raised, and the increase on exercise is excessive. The blood pressure varies. Dilatation of the heart is not a constant feature. Bruits may be present

but have no diagnostic significance. Disorders of rhythm are of frequent occurrence.

The sinus arrhythmia were observed in 50 per cent. of the cases, the respiratory type being more marked. Extra systoles were noted in 18 per cent.; paroxysmal tachycardia and auricular flutter have also been observed.

Vaso-motor and nervous symptoms are not uncommon. They include tremors, exaggeration of reflexes, rapid respiration unaccompanied by dyspnoea, coldness of extremities, excessive sweating, etc. The *pallor reflex*, a white line developing after 10 to 15 seconds on stroking the skin of the chest or abdomen, is very common. Headache, sleeplessness and constipation also occur.

ETIOLOGY.

Several suggestions have been made. Some authors contend that the stress of active service modifies the secretion of the supra-renal glands; others consider the thyroid to be at fault, but palpable enlargement of this gland is rare. Others again hold that the primary disturbance is in the central nervous system, and point to the frequency of other evidence of nervous instability.

The chief predisposing factor is undoubtedly the physical and mental strain of modern war, coupled with the results of exposure, poor diet, and the effects of infections of various types.

The great majority of the writer's cases had had malaria, and some patients believed that quinine was the cause of their heart symptoms.

PROGNOSIS.

The writer emphasises the difficulty of giving a definite prognosis in these cases, and quotes European experience to show that on the whole it is not. He agrees with Lewis that there seems to be little doubt that many of these cases will not be fit for some long period, if ever, to resume their former occupations if such required heavy, or moderately heavy, physical exertion.

TREATMENT.

Ordinary hospital treatment is deprecated as the men become introspective and worry about their condition.

Graduated physical exercises play an important part, firstly, because considerable physical benefit results, and, secondly, because of the mental effect. The formation of classes and periodical moving up from lower to a higher class gives a much needed mental stimulus.

Cardiac drugs are of small benefit; while iron, tonics, and stimulants have only a limited value.

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THE DIARRHŒAL DISEASES OF INFANCY.

In the *Journal of the American Medical Association*, June 7, 1919, Dr. Lewis Webb Hill writing of the etiology and treatment of the diarrhœal diseases of infancy, divides these affections into three classes, viz.—

1. Mechanical diarrhœa.
2. Fermentative diarrhœa.
3. Infectious diarrhœa.

(1) *Mechanical diarrhœa*.—This is most common in children above one year, and is caused by mechanical irritation of the intestinal mucosa from such things as grape-skins, cucumbers, and raw fruits.

The symptoms are ushered in by vomiting and diarrhœa. Undigested skins, etc., may be found in the stools. Death may occur as a result of acidosis due to prolonged vomiting.

The treatment consists in giving castor oil or calomel, plenty of water, and no food except barley water or gruel for 12 hours.

(2) *Fermentative diarrhœa*.—This is the most common diarrhœa of babies. It is usually caused by abnormal decomposition of sugar which is dependent on two conditions,—unabsorbed sugar in the intestine, and bacteria, in the same region of the intestine, to attack it. As the small intestine is relatively sterile, the abnormal decomposition may come about by undigested sugar passing down into the large intestine, or any condition which allows bacteria to flourish in the small intestine, where there is always undigested sugar.

These conditions may be enumerated as follows:—

1. *Over-feeding with sugar.*
2. *Parenteral infections.*—Rhinitis, bronchitis, otitis media, etc., which reduce the amount of salivary juices so that sugar is not digested in small amounts.
3. *Over-feeding.*—Probably also acts by lessening the amount of the intestinal juices.
4. *Nervous exhaustion and excitement.*
5. *Constitutional weakness.*

In addition to the above conditions, fermentation may be caused by abnormal bacteria, such as *Bacillus aerogenes-capsulatus*, and *Bacillus coli communis*, introduced mainly from bad milk.

The writer divides the acids formed as a result of fermentation into volatile and non-volatile. The volatile acids, such as formic, acetic, and butyric acids, are the most harmful. They act, (1) by increasing peristalsis, (2) by injuring the intestinal mucosa, (3) by drawing on the alkali reserve of the body, (4) by upsetting the normal chemical processes of digestion.

TREATMENT.

1. *Mild cases.*—A purge is not necessary as a routine. All sugar should be omitted from

the milk or substitute and the solution boiled for three minutes. A teaspoonful of compound chalk mixture should be added to each bottle.

2. *Moderately severe cases.*—A purge should be given only if there is fever. The child should get no food but weak barley water for twelve hours. He should then be put on a food containing a minimum of sugar and a considerable amount of protein.

The following are recommended:

(a) *Albumin milk.*—This is prepared by rubbing the curds from a quart of milk (prepared with essence of pepsin) through a fine sieve until they are in a finely divided condition. They are then mixed with a pint of butter-milk diluted with a pint of water. The resulting mixture contains fat 2.5 per cent., sugar 1.5 per cent., protein 3.5 per cent.

(b) *Skim milk*—(suitably diluted) with powdered casein.

(c) *Lactic acid milk.*—This can be prepared from skim milk with cultures or tablets containing the lactic acid or Bulgarian bacillus.

(d) *Skim milk dilutions.*

MEDICINAL AND OTHER TREATMENT.

Irrigation of the colon with normal salt solution—most useful in the early stages.

Water.—This should be given freely between feed. If enough is not taken, normal saline should be given subcutaneously.

Sodium bicarbonate—should be administered intravenously in a 2 per cent. solution when acidosis is present.

Compound chalk mixture—is useful, as it neutralises the irritating acids.

Opium—in the form of small doses of paregoric when the child is being exhausted by many loose, watery motions.

Stimulants—such as brandy or caffeine—are often needed.

Protein form of fermentative diarrhœa.—This form can be recognised by the stools being brown and foul instead of being green and acid-smelling. The treatment is the same as in the carbohydrate form, but the diet should have a low protein and high carbohydrate content.

Infectious diarrhœa.—This disease is usually due to the dysentery bacillus, but occasionally we may find the gas bacillus or streptococcus. There is always mucus, blood and pus in the stools.

As the feeding differs in the group caused by the dysentery bacillus and streptococcus from that caused by the gas bacillus, a test should always be carried out to distinguish them. This is readily done by sterilising a test tube and U-fermentation tube with strong nitric acid, boiling a small portion of the stool with half a teaspoonful of dextri-maltose, and 15 c.c. tap water, and then filling the U-tube with the

mixture. The presence of gas after 24 hours' incubation indicates :—

Bacillus aerogenes capsulatus.—The general treatment of these cases is the same as for fermentative diarrhoea; but the dysentery group should be fed on a low protein and a high carbohydrate diet, while the gas bacillus cases do best on lactic acid milk.

THE WASSERMANN REACTION.

From the *Journ. Amer. Med. Assoc.*, Vol. 72.
May 24, 1919.

DR. CHARLES E. SIMON in a detailed paper discusses the partially positive Wassermann reaction. He draws attention to the now well-known "natural amboceptor" for sheep's corpuscles in human serum, which may convert an otherwise fully positive into a partial or negative result; and he refers to the two known methods of avoiding this difficulty, *viz.*, (1) Noguchi's method of substituting an anti-human system for Wassermann's anti-sheep system, and (2) extracting the natural amboceptor by incubation with washed sheep's corpuscles. He prefers the latter.

He next discusses the effect of varying quantities of the syphilitic antibody in producing partial reactions. From his experiments he concludes that with relatively large quantities of antibody, complement fixation takes place instantaneously. If the serum (antibody) be diluted the fixation is no longer instantaneous, and under the fixed condition of an experiment partial hæmolysis, *i. e.*, a partial positive, must occur at a given dilution. This may be expressed otherwise by the generalisation that the velocity of the reaction is proportional to the quantity of the reacting substance.

His findings appear to warrant the conclusion that unless the patient's serum contains a certain minimal quantity of antibody a completely positive reaction will not be obtained in the standard time of incubation. It would further follow that the meaning of such partial reaction could be cleared up by a longer period of incubation.

Based on such results he proposes to designate as a unit that quantity of the syphilitic antibody which requires 60 minute's incubation at 37° C. to bring about complete complement fixation. An instantaneous reaction without incubation is taken as 60 units and is regarded as 100 per cent. positive. Thus if the reaction takes 10 minutes it is $\frac{10}{60} \times 100$ or 83 per cent. positive. He therefore proposes to substitute this method of expressing results for the existing one of plus signs.

Following up the dependence of complement fixation on the element of time, he conceives the mechanism of the reaction to be regulated by

mass action, the antibody playing the part of catalytic agent, and that if the amount of antibody be below the minimal quantity required, a partial reaction will occur. It follows further, as will presently appear, that, by altering the time of incubation this partial reaction can be resolved into either (a) a true positive or (b) a false positive due to other causes.

His method is somewhat different from that generally employed and may be briefly stated. The serum is inactivated by heat in the ordinary way, the corpuscles are then added and the mixture incubated. The mixture is then centrifuged and the supernatant fluid used for the test. This manoeuvre is for the purpose of extracting natural amboceptor. The antigen and complement are then added and the whole again incubated. The tubes are then removed, amboceptor and corpuscles are added, and the whole again incubated until the controls are hæmolyzed. The negative cases are then read off. The non-hæmolyzed tubes are then centrifuged and the colour of the supernatant fluid noted. If this is colourless, the reaction is 100 per cent. If partial hæmolysis has occurred, he puts up the experiment again, incubating for five minutes before adding the hæmolytic system. If the reaction is now fully positive, it is a 91.6 per cent. reaction. If still partial, incubate a tube for 10 minutes. If this is fully positive, it is an 83 per cent. reaction. It will then be seen that this method must yield a straight positive or a straight negative, as a partial reaction due to the syphilitic antibody will be fully positive finally by thus altering the conditions of the experiment; whereas a partial positive due to accidental factors either disappears or remains partial.

TRENCH FEVER

From the *Dublin Journal of Science*,
June 1919.

AN important paper by DR. ROWLETTE refers chiefly to the work of the American Commission on trench fever. This commission started its work on February 4th, 1918. Previous to that date McNee and his associates succeeded in conveying the infection from man to man by transfusion or intramuscular injection of whole blood; but failed when they used serum instead of whole blood. They also found that the corpuscles were infective after repeated washings with saline. Later Davies and Weldon succeeded in conveying the infection from an acute case, by means of lice, to one of themselves.

The American Commission, in the first place, set themselves to differentiate the disease from typhoid and paratyphoid, which they easily succeeded in doing by repeated examination of the urine and faeces of patients and of experimental subjects suffering from the disease. Secondly, they were able to confirm McNee's work in the

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CURRENT TOPICS.

main; but differed from him in finding plasma infective.

Their main conclusions are as follows:—

1. That trench fever is a specific infectious disease; that it is not a modified form of typhoid and paratyphoid fever, and is not related, from an etiological standpoint, to these diseases.

2. That the organism causing the disease is a resistant filtrable virus.

3. That the virus causing trench fever is present, particularly in the plasma of the blood of trench fever cases; and that such plasma will produce the disease on inoculation into individuals.

4. That the disease is transmitted naturally by the louse *Pediculus humanus*, Linn., var. *corporis*; and that this is the important and common means of transmission; that the louse may transmit the disease by its bite alone, the usual manner of infection, or the disease may be produced artificially by scarifying the skin and rubbing in a small amount of the infected louse excrement.

5. That a man may be entirely free from lice at the time he develops trench fever, the louse that infected him having left him some time previously; and that the louse need only remain upon the individual for a short period of time in order to infect him.

6. That the virus of trench fever is also sometimes present in the urine of trench fever cases, and occasionally in the sputum; and that the disease may be produced in man by the introduction of the virus in the urine or sputum through the scarified or otherwise abraded skin.

7. That since the urine, and sometimes the sputum, of trench fever patients are infective, these should be sterilised in order to avoid the possibility of accidental infection from them.

8. That in order to prevent trench fever or limit its spread and thus save man-power for the armies, greater efforts must be made to keep soldiers in general from infestation with lice.

CONDITIONS THAT MAY SIMULATE THE REFERRED PAINS OF VISCERAL DISEASE.

From *The Practitioner*, June 1919: E. E. CYRIAX, M.D.

THE author states:—

A. In a number of cases the diagnosis of referred pain of visceral disease is erroneous. The pain and tenderness may be due to totally different causes, of which there are two main groups:—

1. Irritation, direct or reflex, of any of the structures surrounding or immediately adjacent to the nerves along which the referred pains are actually transmitted. These structures are the vertebræ and the ribs with their joints and contiguous muscles.

2. Direct irritation of nerves, muscles, or vessels in the intercostal spaces.

B. In a number of cases the irritable states mentioned are the cause, or one of the causes, of visceral disease and not the result of the latter. They may, however, be found in association with true referred pains, and vicious circles are easily set up.

Considered in detail, the conditions that may give rise to symptoms which may simulate referred pains are as follows:—

1. *Vertebral column*.—(1) Minor displacement of individual vertebræ. (2) Displacement of the intervertebral discs or the interarticular cartilages. (3) Synovitis of the vertebral joints. (4) Ligamentous contractions and adhesions between the vertebræ. (5) Alterations in the normal vertebral curves.

2. *Ribs*.—Minor displacements: (1) Posterior end. (2) Anterior end.

3. *Muscles*.—(1) Hypertonus. (2) Fibrositis. (3) Venous congestion. (4) Adhesions.

4. *Intercostal nerves*.—(1) Irritation from the pathological conditions of the vertebræ, ribs, and erector spinæ. (2) Pressure on the peripheral portions of the nerves from enlarged organs in the chest or abdomen. (3) Spread of inflammatory or irritable processes of viscera contiguous to the intercostal space. (4) Increased irritability of muscles and nerves in the intercostal spaces.

SPECIFIC TREATMENT IN INFLUENZAL PNEUMONIA AND OTHER ACUTE INFECTIONS.

From *The Practitioner* June, 1919.

WYNN gives the result of injecting a mixed vaccine of pneumococci, streptococci and influenza-bacilli in 107 consecutive hospital patients during the first five days of the illness:—

The doses given were as follows:

Adult man	...	80 to 100 million of each	
Adult woman	...	60 " 80 do. do.	
Child 12 to 14 years	...	40 " 50 do. do.	
Child 2 to 3 years	...	10 " 20 do. do.	

Patients inoculated during the first day.—These numbered 28.

71.4% had a normal temperature within 24 hours and all recovered.

Patients inoculated during the second day.—The number in this group was 23.

47.8% obtained a normal temperature within 24 hours of the injection. There was one death.

Patients injected on the third day.—Twenty-two cases.

In 50% the temperature fell to normal within 24 hours. There were two deaths.

Patients injected on the fourth day.—Twenty cases.

In only 30% did the temperature fall to normal within 24 hours. Half of the patients

required a second injection. There were five deaths.

Patients injected on the fifth day.—Fourteen cases.

In 35.7% the temperature reached normal within 24 hours. There were ten deaths.

The writer believes it possible to abort cerebrospinal fever in a similar manner, by the use of vaccines at an early stage, and quotes two successful cases.

It is remarkable that there was no clinical evidence of a negative (apophylactic) phase.

LATENT MALARIA.

From the *Journal of Tropical Medicine and Hygiene* (S. Chittenden, *Munch. Med. Woch.*).

A POSITIVE result from injecting one milligram of adrenalin is a rise of temperature and the appearance of plasmodia in the blood. The effect may not be produced for several days and two injections may be required. A negative result does not exclude this possibility of the presence of latent malaria.

INFANTILE SCURVY (BARLOW'S DISEASE).

From the *Medical Press*, January 29th, 1919.

JULES COMBY, of Paris, draws attention to the frequency with which this disease is not diagnosed. It is mistaken for rheumatism, syphilis, osteo-myelitis, infantile paralysis, coxalgia, Pott's disease, and many other diseases. There are four cardinal points which establish the diagnosis, viz. :—

1. It usually occurs in children from 6 to 18 months of age, brought up on artificial food or sterilised milk.

2. All present in a more or less marked degree painful pseudo-paralysis of the lower limbs, and movement of the leg elicits signs of distress.

3. Some display diaphyseal swelling affecting the ulna or femur sub-periosteal hæmatoma.

4. Children who have cut their teeth have spongy, bleeding gums, and the child's mouth, when it cries, often fills with blood.

The treatment recommended is as follows :—

1. Leave the child in its cradle, do not rub, bathe, or dress, in fact avoid every kind of movement for the first few days.

2. Substitute plain cow's milk for any sort of prepared milk.

3. A teaspoonful of grape juice, orange juice, or dilute sweetened lemon juice should be given twice a day.

PRESSURE CHANGES IN THE CEREBROSPINAL FLUID FOLLOWING INTRAVENOUS INJECTION OF SOLUTION OF VARIOUS CONCENTRATIONS.

From the *American Journal of Physiology*, Vol. XLVIII, No. 4, May 1st, 1919.

WEED and MCKIBBEN give some interesting details of experiments on cats. The anæsthetic

used was ether given by intratracheal insufflation. The subarachnoid space was entered by puncture through the occipito-atlantoid ligament. A glass manometer was then connected to the puncture needle. If previous experience showed that a pressure below zero was likely to be attained, an U-shaped manometer filled to zero with Ringer's solution was used—otherwise a straight manometer. Injections of the solutions of different concentrations were all made intravenously.

The solutions experimented with were :—

- (1) Ringer's solution (NaCl, 0.9 per cent.; KCl, 0.042 per cent.; CaCl_2 , 0.025 per cent.)

- (2) Hypotonic solutions—distilled water.

- (3) Hypertonic solutions—NaCl, 30 per cent.; NaHCO_3 (saturated solution, about 18 per cent.), Na_2SO_4 , 30 per cent.; glucose, 30 per cent.

It was incidentally observed that the hypertonic solutions of all the salts experimented with caused severe respiratory and cardiac disturbances. The toxicity was apparently not dependent on the absolute amount injected, being frequently observed when only 1 or 2 c.c. had been introduced. There was considerable variation in the tolerance of the individual animal.

Note.—The injection of hypertonic salt solution may prove of use in cases of cerebrospinal fever and other diseases characterised by an increase in the pressure of the cerebrospinal fluid. Moreover, in many such conditions intravenous injections of salt solutions are independently indicated in order to combat toxæmia. By using hypertonic salt solutions we should be "killing two birds with one stone."—J. A. S.

The conclusions arrived at are as follows :—

1. The pressure of the cerebrospinal fluid in the etherized cats has been on average 119 mm. of this fluid, if read immediately after connecting the manometer with the needle in the subarachnoid space; but this pressure if read some minutes later, is somewhat higher, giving an average of 129 mm., this rise being due, partially at least, to the replacement of cerebrospinal fluid displaced in the manometer or lost during its connection.

2. Intravenous injections of Ringer's solution cause no lasting change in the pressure of the cerebrospinal fluid.

3. Intravenous injections of hypotonic solutions (distilled water) are followed by a marked and sustained rise in the pressure of the cerebrospinal fluid.

4. Intravenous injections of hypertonic solutions (concentrated sodium chloride, sodium bicarbonate, sodium sulphate and glucose) cause initial rise in the pressure of the cerebrospinal fluid followed immediately by marked fall in this pressure, often to below zero.

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EXPERIMENTAL ALTERATION OF BRAIN-BULK.

The American Journal of Physiology, Vol. XLVIII, No. 4, May, 1919: Weed and McKibben.

The marked changes in the pressure of the cerebrospinal fluid described elsewhere were found to have a definite relation to the volume of the brain.

METHODS.

The solutions used were those already described in the preceding extract. Observations were made both on cats with unopened skulls, and cats with subtemporal trephine openings. The animals were finally killed by ether. Immediately after death 10 per cent. formalin was injected through the aorta, the central nervous system was then removed and the whole immersed in 10 per cent. formalin. Although this method of fixation was not found to be entirely satisfactory it enabled general comparisons to be made.

In discussing the results of the experiments thus carried out, the writers draw attention to the classical view (Monro-Kellie doctrine) that the volume of blood circulating within the cranium must at all times be constant, provided the skull is not trephined, and cannot be diminished by arteriotomy or venesection.

The views of Burrows are then referred to. This author was the first to point out the existence of "extra vascular serum," and contended that while the whole contents of the cranial cavity, *viz.*, brain, blood and the serum, together must at all times be nearly a constant quantity, they may vary independently. He emphasised the importance of the cerebrospinal fluid, as the means of replacing the loss of intracranial blood caused by *senile* bleeding.

Attention is drawn to the more modern work of Diller and Halliburton, who state "that the cranial contents cannot any longer be regarded as a fixed quantity without the power of expanding or contracting in volume."

As regards the results of their own experiments the writers advance several reasons for believing that the changes in brain volume, observed after the technical procedures employed in fixing, etc., cannot be due in the first place to changes in the volume of blood. Secondly, they cannot be due alone to changes in the pressure of the cerebrospinal fluid, since they occur equally in the opened and unopened skull.

They therefore come to the conclusion that both the changes in the pressure of the cerebrospinal fluid and the alterations in the bulk of the brain are due to fundamental osmotic changes in the blood supplied to the brain, brought about by the intravenous injection of solutions of various concentrations.

The results are summarised as follows:—

"1. Intravenous injection of a hypertonic solution (30 per cent. NaCl or saturated NaHCO₃) is followed by a marked decrease in size of the brain; when the skull is opened the brain may be seen to fall away several millimeters from the inner surface of the skull after such injection.

"2. Intravenous injection of a hypotonic solution (water) causes a marked swelling of the brain; when openings are made in the skull the brain will rise, forming tense herniae protruding several millimeters through the trephine openings.

"3. These changes are independent of the volume of the fluid injected and are probably due to fundamental osmotic effects of the hypotonic and hypertonic solutions.

"4. The brains of old cats fail to respond readily to intravenous injection, particularly to the intravenous injection of hypotonic solutions.

"5. Internal changes, recognizable histologically, have been found quite constantly in the brains of animals which have been given intravenous injections of hypertonic or hypotonic solutions and which have not been trephined. On the contrary, in animals in which the skull is opened and the brain thus allowed to change its volume freely, these histological changes have not been demonstrated."

DIGESTION OF THE ŒSOPHAGUS AS A CAUSE OF OPERATIVE HÆMATEMESIS.

The British Journal of Surgery, April, 1919.

PRINGLE and TEACHER give details of 15 cases in which they consider it most probable that digestion of the œsophagus occurred during life. In 11 of these cases there was vomiting of brown or black materials, or actual hæmatemesis. In eight cases the condition in the œsophagus was advanced—destruction and perforation. In seven it was early. In eight cases there was no digestion of the stomach. In seven there was slight digestion of the stomach. In nine of the cases there had been operations and in six there had been no operations.

The writers admit that the digestion may continue after death, so that further digestion occurs before the case comes to the post-mortem table. On the other hand, these post-mortem changes may have the effect of obscuring indications of vital reaction, such as formation of fibrin in the pleural sacs, sub-mucous and intra-mural hæmorrhages.

They conclude: "The post-operative vomiting of black material or hæmatemesis is a symptom of great importance to the practical surgeon. In some cases the cause of these symptoms appears to be digestion of the œsophagus. This condition may vary in different cases, from superficial erosion of the interior of the œsophagus to perforation or widespread destruction of the tube and damage

to adjacent structures. The vital nature of the condition is shown by the presence of hæmorrhages into the œsophageal wall, lungs and pleuræ; while, in one case at least, inflammatory reaction was observed in the lungs and pleural sacs.

The vomiting of black material or actual hæmatemesis was observed in eleven out of the above fifteen examples of digestion of the œsophagus found at post-mortem examination. In six of the cases no operation had been performed, but these were all of a severe infective or toxic nature.

In contrast with the state of the œsophagus, there was usually little or no digestion of the stomach.

In conclusion, we submit that digestion of the œsophagus may occur during life, and that as a result blood may be vomited.

That this digestion may take place in any disease in which great lowering of vitality occurs.

That ante-mortem digestion of the œsophagus is one cause of post-operative hæmatemesis."

HÆMORRHOIDS.

In the *Medical Press* of April 10, 1918 (p. 278), appears an article based on the author's experience in over 300 cases of hæmorrhoids treated by the injection of quinine and urea hydrochloride solution (5 per cent. in most instances; 10 per cent. in a few resistant cases). The author has found that this treatment is uniformly successful in chronic internal hæmorrhoids with protrusion and bleeding as their chief symptoms, but does not consider that it is suited to inflamed, strangulated, or external piles. In about 50 per cent. of his cases protrusion was remedied by a single injection.

The pile having been cleansed with an antiseptic solution, preferably iodine and alcohol, enough quinine and urea solution should be injected to distend it slightly. The needle should be inserted at a point as far from the skin margin as possible, and the injection made through, not into, the mucous membrane. The patient can go about his usual avocation without restrictions.

THE TAKING OF QUININE.

FOOTNER (G. R.). A Note on some Symptoms following the Taking of Quinine.—*Lancet*. 1918. July 6. p. 16. (Tropical Diseases Bulletin.)

A young lady, who gave a history of quinine intolerance on two occasions, after 5 gr. of quinine bihydrochloride by the mouth, suffered from shortness of breath, œdema of eyelids and urticaria, with a recurrence after 4 gr. by rectum. Uterine hæmorrhage also took place, but whether this was attributable to quinine is not stated. After 30 gr. doses of calcium chloride the quinine intolerance diminished and later 3 intramuscular injections of 7½ gr. in 24 hours had no untoward effect.

BARBARY (F.), BIZOUARD and CIERS. Etude de la crise hématurique chez les paludéens. Base d'un traitement des formes tenaces et graves. *Gaz. Méd. de Paris*. 1918. Dec. 17. 3 Ser. Vol. 80. Year 82. No. 50. pp. 619-622. (Tropical Diseases Bulletin.)

paludisme.—*Bull. Acad. Med.* 1918. Dec. 17. 3 Ser. Vol. 80. Year 82. No. 50. pp. 619-622. (Tropical Diseases Bulletin.)

The authors review the phenomena of malarial anæmia, for the treatment of which they recommend the intravenous administration of quinine hydrochloride along with colloidal iron. Their custom is to give an injection every second day—without reference to the incidence of any febrile paroxysm—of 50 to 60 cgm. of the neutral salt in 125 gm. of serum, and 2 cc. of colloidal iron (*fer colloidal electromartiol*).

PORAK (René). Biliéuse hémoglobininurique paludéenne et auto-anaphylaxie.—*Bull. et. Mém. Soc. Méd. Hôpit. de Paris*. 1918. May 31. Vol. 42. Nos. 19-20. pp. 559-566. (Tropical Diseases Bulletin.)

After giving a detailed account of two cases of blackwater fever the author sets forth reasons for which it appears to him that, in conformity with the teaching of Vidal and Ascoti, blackwater fever can best be explained by the theory of auto-anaphylaxis. The conclusion is based on clinical and ætiological analogies between anaphylaxis and blackwater fever, on histological examination, and on the physiological action of organ extracts. In both blackwater fever and anaphylaxis the onset is sudden, the evolution is rapid and there is massive destruction of red corpuscles. In both conditions the red cell resistance is normal except at the beginning of the attack. The author examined the action of the serum and of watery extract of the organs (fresh and dried at 56° C.) of one of his patients on the red cells of the patient himself and on those of a healthy soldier; he found that neither the serum nor the extract contained a hæmolytic substance.

The organic lesions usually invoked to explain death were not present in the author's fatal case; the kidneys especially were normal. The massive destruction of red cells by auto-anaphylaxis entails an extreme anæmia; this does not as a rule cause death so rapidly as in the author's case, but it is known that anaphylaxis exercises an elective action on the nerve centres.

HEAT STROKE

RAWLING (L. Bathe). Cerebral Œdema (Excess Cerebrospinal Fluid): Its Causation and Surgical Treatment.—*Brit. Med. J.* 1918. May 4. pp. 499-502. (Tropical Diseases Bulletin.)

A very definite relation exists between the amount of cerebrospinal fluid present intracranially and the intracranial venous pressure. If the absorptive capacity of the veins is impaired, either by disease or injury, cerebrospinal fluid collects, producing as a result cerebral œdema. For example, if, as the result of heat-stroke, the tunica intima of the cerebral sinuses and veins is impaired, temporarily or permanently, cerebrospinal fluid will collect in excess.

A large number of cases from Mesopotamia were admitted to hospital in India with the diagnosis of "heat effect." Some of them proved to be malaria, others to be suffering from disease of the typhoid group, and so on, but there remained a considerable number (some hundreds) concerning whom it was necessary to retain the original diagnosis (heat effects). An account is given of the symptoms from which these patients suffered. Headache was severe and persistent; the patient was irritable and despondent; vomiting was

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present only in the worst cases; photophobia was a marked feature; the pulse rate during the exacerbation of headache was slowed to 50 or 60 and the systolic blood pressure raised to 140 or 150 mm. Hg; both superficial and deep reflexes were exaggerated; the patients were shaky and nervous, with tremors of the hands, etc.; the temperature was slightly raised with further elevation during the severe periods of headache; epileptiform convulsions occurred in eight of the eleven cases recorded.

Details are given of seven cases which were treated by operation—subtemporal decompression—and, as a contrast, of four cases who refused operation. In the seven cases operated upon, immediate benefit resulted, and headache of any severity was a thing of the past. Only one case had further fits after operation. The mental condition improved, and the patients, previously miserable and depressed, became bright and cheerful. The later histories of these seven cases confirm the early results. In the four patients who refused operation the fits and headache persisted and the men were eventually discharged in a rather pitiable condition. The author writes:

"Operation is indicated in severe and intractable headache, with or without epileptiform convulsions, whether due to heat stroke, cerebral malaria, shell-shock or neurasthenia. It is obvious that in every case all ordinary remedies, including prolonged rest in bed (the most important of all), should receive a fair trial, but in view of the injurious effect produced on the cortical cells by prolonged soaking in superfluous fluid, operative measures should not be unduly delayed. I would suggest three months as a fair probationary period."

—W. YORKE.

MCKENZIE (Pierce) and LE COUNT (E. R.). Heat Stroke. With a Second Study of Cerebral Edema.—*Jl. Amer. Med. Assoc.* 1918. July 27. Vol. 71. No. 4. pp. 260–263. (Tropical Diseases Bulletin.)

The etiology and symptomatology of heat stroke are briefly reviewed.

Post-mortem examinations were made on the bodies of 37 persons who had died of heat stroke, and the following findings were found quite regularly: oedema of the brain; meningitis or both; marked generalized passive congestion, especially of the brain and lungs; oedema of the lungs; hyperplasia of the spleen; cloudy swelling of the liver, kidneys, and myocardium; and petechial hemorrhages of the various mucous membranes and of the skin, with irregular and lessened yellow material of the suprarenal cortices. In all cases the cerebrospinal fluid was clear, colourless and usually increased in amount. Oedema of the brain alone was present in 22 cases; oedema of the leptomeninges alone in nine; oedema of the brain and leptomeninges in four; a foramen magnum pressure furrow of the brain stem in fourteen, and in three only hyperæmia of the brain and leptomeninges.

Owing to the frequent and seemingly marked oedema of the brains an attempt was made to determine the amount of water present with more accuracy. The method adopted, briefly described, was that of Koch and Voegtlin. For comparison, similar portions of brains of ten adults dead from accidents were examined in a like manner. An average of the percentage of water for these similar portions of control brains was 79.7 per cent. The authors hold that a percentage of moisture over 80 per cent. may be taken as above normal. The brains of 22 persons who had died of heat stroke during 1916–17 were all of high water content: varying between 80.1 and 83.8 per cent.

Various recommendations for prophylaxis and treatment are made.—W. Y.

SLEEPING SICKNESS.

MASTERS (Walter E.). The Treatment of Human Trypanosomiasis by Injectio Antimonii Oxidi.—*Jl. Trop. Med. & Hyg.* 1918. July 15. Vol. 21. No. 14. pp. 146–148. (Tropical Diseases Bulletin.)

In this paper the author records his observations on the treatment of cases of sleeping sickness by (i) antiluetin, and (ii) injectio antimonii oxidi. The former drug, antiluetin, proved so painful that it had to be abandoned.

Injectio antimonii oxidi consists of a solution of antimony oxide in equal parts of glycerine and water slightly heated, 1 cc. containing .01 gr. of the drug. Two to three cc. can be given intramuscularly at each injection.

Sixty-three cases of trypanosomiasis were treated, but 30 absconded before they had received 0.3 gr. of antimony oxide. The remaining 31 (*sic*) were divided into two classes.

Class A. In all these trypanosomes were found in the gland juice upon the first examination. Some of the cases were in the first stage of the disease and some in the second.

Class B. In these the cervical glands were so atrophied that no trypanosomes could be found, or if they were found at the onset, the disease was so advanced that repeated examinations later would have been impracticable.

The results of treating the 21 cases belonging to Class A were as follows:—Cured 10, improved 5, unimproved 5, worse 1. The term "cured" is used in a very restrictive and comparative sense.

Of the 10 cases in Class B, 6 died, 1 was slightly improved, 2 were much improved, and 1 was discharged free from all signs and symptoms of the disease.

The conclusions are:—

"Injectio antimonii oxidi will clear the trypanosomes from the lymphatic circulation more readily than any drug or combination of drugs hitherto applied to the disease.

"The general symptoms are more rapidly and more generally cleared up than with any other medicaments.

"The drug should be given in $\frac{1}{100}$ gr. doses every other day until a minimum dose of $\frac{4}{100}$ gr. has been given.

"If the trypanosomes are not cleared out by the $\frac{4}{100}$ dose soamin, 0.77 grm. should be given in addition to more injectio antimonii oxidi every fifth day. One large dose is more effective than many small doses. Injectio antimonii oxidi is a great advance on all other methods, and can be administered by native infirmiers en route."

—W. YORKE.

MCDONAGH (J. E. R.). Antimony in Bilharziasis. [Correspondence.] *Lancet.* 1918. Sept. 14. p. 371. (Tropical Diseases Bulletin.)

The author recalls that he used antimony in bilharziasis in 1912 and succeeded in causing a disappearance of the ova from the urine in 23 cases. Three preparations were used: (1) Tartar emetic intravenously in doses of 1–1½ gr. dissolved in 5 oz. of water to avoid thrombosis twice or three times a week. (2) Antiluetin intramuscularly and intravenously alternately, beginning with 0.025 gr. and ending up with 0.2 gr. (3) Colloidal antimony both intravenously and intramuscularly in doses of 0.5 cc. to 2 cc. of a 0.2 per cent. emulsion. Both antiluetin and colloidal antimony appear to be effective. Tartar emetic.—R. T. L.

CHRISTOPHERSON (J. B.). i. The Successful Use of Antimony in Bilharziasis administered as Intravenous Injections of Antimonium Tartaratum (Tartar Emetic). *Lancet*. 1918. Sept. 7. pp. 325-327.

ii. Intravenous Injections of Antimonium Tartaratum in Bilharziasis. *Brit. Med. J.* 1918. Dec. 14. pp. 652-653.

iii. Antimony in Bilharziasis. [Correspondence.] *Lancet*. 1919. Jan. 11. p. 79. (*Tropical Diseases Bulletin*.)

i. Antimony given as intravenous injections of tartar emetic is, in the author's experience, a definite cure for bilharziasis. The method used was as follows:—

"A 10 ccm. record syringe, with a fine needle, was used. The injection was given into one of the conspicuous veins at bend of elbow.....The patient lay down for an hour on bed after injection, or longer if symptoms intervened. The solution used was tartar emetic $\frac{1}{2}$ gr. to 20m. aq. distill., and diluted with 2 vols. of aq. distill. at time of use. The injection was repeated and the dose increased by $\frac{1}{2}$ gr. every other day until 2 gr. was reached, and this was continued until 30 gr. had been injected."

It is essential to be on the watch for symptoms of acute, subacute or chronic antimony poisoning. Improvement in the symptoms is noticeable after the second or third injection by the clearing up of the urine, but a course of injection lasting over 15-30 days and amounting to 30 gr. represents the required "killing dose." Details are given of a number of cases successfully treated. The author discusses very fully the risks to be avoided in administering the drug which he finds as specific for bilharzial infections as for leishmaniasis.

ii. The continued use of injections of antimony tartrate at the Khartoum Civil Hospital convinces the author of its efficacy in the treatment of bilharziasis. The permanency of the cure has, however, still to be proved. In the present paper details are given of a case of vesical bilharziasis successfully treated in the out-patient room of a private practice. "The patient had had hæmaturia for five years. After the fifth injection the blood disappeared from the urine and the patient stated that it was the first time for four years that the urine had been clear. After the twelfth dose the patient was convinced that he was cured, but the treatment by Dr. Malouf was continued until he had given gr. 31 in fifteen doses varying from gr. $\frac{1}{2}$ to gr. $2\frac{1}{2}$ in fifty-six days." The urine has been examined half a dozen times since the injections ceased; it contained nothing abnormal. The author again calls attention to the care and judgment necessary in the use of this drug. Intercurrent diseases of the heart, liver, kidneys, and lungs should be looked for, but with proper precautions the drug is undoubtedly of great value in controlling, in an astonishing way, the symptoms of a disease hitherto regarded as intractable.

iii. After one and a half years' experience of cases under tartar emetic treatment the author believes that it will prove a great benefit to the people of Egypt. If they can get rid of the scourge of bilharziasis the Egyptians will become a clear-complexioned, rosy-faced race. One of the most striking features is this change from the muddy, sallow face. The author in commencing his researches on this subject was unaware of McDonagh's previous results and took up the matter after a series of trials of the drug in protozoal infections.—R. T. L.

TREATMENT OF BILHARZIAL DISEASE BY INTRAVENOUS INJECTIONS OF ANTIMONIUM TARTARATUM.

IN THE *Journal of Tropical Medicine and Hygiene*, May 1, 1919, Low gives the result of 12 injections ($15\frac{1}{2}$ grains in all) of antimonium tartaratum in a case of bilharzial disease. The injections extended over 40 days. The initial dose was a half-grain and was gradually increased to 2 grains.

The urine became finally free from ova after 33 days.

He concludes that the toxic effects of antimony on bilharzial adults is definitely proved.

VACCINE TREATMENT OF FILARIAL LYMPHANGITIS.

IN the *Journal of Tropical Medicine and Hygiene*, May, 1919, Rose confirms Wise's discovery of a streptococcus in these conditions and recommends an autogenous vaccine in doses of 100 million, 200 million, and 200 million, given at intervals of two weeks. The reactions are mild. Out of seventeen long-standing cases, nine have had no recurrence, after six months, while the attacks in the case of the others were milder.

Reviews.

Heart: Past and Present.—By EDGAR LEA, M.D., (Vict.), M.R.C.P. (Lond.) Messrs. Baillière Tindall and Cox, London. 7/6 net. 1919.

THIS new publication is one that strikes out a new line, and a line that is of great interest. The section dealing with the *past* of the heart is all too brief but is none the less interesting. As the author says, the memories of great men in the past deserve to be kept, and this the author has attempted to do by tracing the history of the evolution of cardiology from the period preceding Corvisart to the epoch-making researches of Sir James MacKenzie. To those who have the time and desire to make themselves acquainted with the gradual evolution of our knowledge regarding the heart this first section will be a great pleasure to read. Although brief, it touches on most of the great discoveries and advances made in cardiology up to the beginning of the present century, and discusses the parts played by physiology and pathology in the advance of knowledge.

The second part of the book gives a lucid account of the present state of our knowledge as based on MacKenzie's work.

It is divided into short, readable chapters, and deals, in its three sections, with most of the modern views and ideas that have so completely replaced the old teachings about the heart's action and its

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failings. The volume is all too short and the contents meagre for the importance of the matter, and we hope that the author in his future editions will be able to elaborate and go into more details, particularly with reference to the historical section of the work. We have read this first edition with very great pleasure and congratulate the author on his inauguration of a new line of thought and on the skill with which he has made use of the materials to his hand.

Practical Vaccine Therapy for General Practitioners.—By R. W. ALLEN, M.A., M.D., B.S., late Captain R. A. M. C. London: Messrs. H. K. Lewis, & Co., Ltd, 1919.

THIS is a new work on vaccine therapy by the author of "Vaccine Therapy," "Bacterial Diseases of Respiration," etc. Allen has for many years been the great advocate of large dosage, doses capable of exciting a reaction, doses and intervals controlled by close clinical observation of the responses made by the patient's tissues to the impulses administered to them. In his advocacy of big doses he claims that in none of his writings during the last twelve years has he misled his readers upon a single important question.

The idea underlying the publication of the present volume is to supply to the general practitioner the information necessary for the carrying out of the practical application of vaccine therapy. Such instructions and explanations are given as will enable the doctor to give his patients the benefits of the new proved and tested method of treatment.

The volume runs to three hundred odd pages, and in it the practitioner will find sufficient information to enable him to carry out the principles of vaccine treatment in his every-day practice. The method of treatment is not meant to supplant but to assist the ordinary methods of treatment of proved value. We can heartily recommend this volume to our readers as likely to give them very great assistance in the scientific methods of modern treatment.

The Pituitary.—A Study of the Morphology, Physiology, Pathology, and Surgical Treatment of the Pituitary, together with an account of the therapeutical uses of extracts made from this organ. By W. BLAIR BELL. London: Baillière, Tindall and Cox, 1919.

THOSE who are interested in this all-absorbing subject, and more particularly those who have read Cushing's book, will agree that there is room for a work placing this subject on a rational basis. Whether the monograph under review fulfils the requirements we leave the reader to judge.

The present volume is divided into four parts:—Part I deals with the morphology of the pituitary; Part II with the physiology; Part III with associated disorders; and Part IV

with the therapeutical uses of extracts of the gland. Each part is an entity in itself, so that the student of anatomy, physiology or medicine can with equal ease select those portions which interest him most.

The chapter on the therapeutical uses of pituitary extracts should be of considerable interest to the physician. A perusal of its contents will prevent rash and empirical use of a powerful therapeutic agent, the administration of which in unsuitable cases or in the wrong set of circumstances may be attended with fatal results.

The volume is profusely illustrated and most of the drawings are original.

It is a pleasure to read this exposition of the subject after wading through the wearisome mass of details of cases which constitute the bulk of Cushing's book.

A Text-book of Physiology.—By WILLIAM H. HOWELL, Ph.D., M.D. Professor of Physiology in the John Hopkins University, Baltimore. Seventh edition, thoroughly revised. Octavo, 1059 pages; fully illustrated. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, 21s. net.

SOME three years have elapsed since the sixth edition of this well-known work on physiology was placed in the hands of the printers. During this time a good deal has been accomplished in the world of physiological research, notwithstanding the cramping influence of the great world war and the natural diversion of our energies to problems directly connected therewith. Many alterations have been necessary in order to incorporate this new knowledge; but the general arrangement of material and the principles of presentation originally adopted have not been altered.

It is unnecessary to dilate on the simplicity of language and the lucidity of expression by which this well-known book is characterised. The fact that it has reached its seventh edition in thirteen years speaks for itself. It is now, as ever, the most complete and up-to-date summary of human physiology within the reach of the student or practitioner.

OBITUARY.

LIEUTENANT-COLONEL JAMES GRAHAM HOJEL, Bombay Medical Service, died of heart failure at Bombay on March 21st, aged 55. He was the son of the late Brigade-Surgeon A. N. Hojel, I. M. S., and was educated at Trinity College, Dublin, where he graduated B.A., M.B., and B.Ch. in 1886. Entering the I. M. S. as surgeon on March 31, 1888, he became Major on March 31, 1900, Lieutenant-Colonel on March 31, 1908, and was placed on the selected list on April 15, 1911. He was for some years Civil Surgeon of Ahmednagar, and latterly surgeon to the Gokuldas Tejpal Hospital in Bombay. During the war he also had charge of Lady Hardinge's Hospital, and of the Gerard

Freeman-Thomas War Hospital in Bombay. He received the C. I. E. on January 1, 1917.

ASSISTANT-SURGEON ERNEST HUGH BOILARD, M.C., I.M.D., died at Campbellpur, Punjab, on March 29, aged 38. He was born on July 13, 1880, and joined the department on November 3, 1904. He received the Military Cross on January 14, 1916. Previous to the war he was employed on plague duty in the Central Provinces.

LIEUTENANT JUGUL KISHORE SHARMA, Indian Medical Service, was reported as having died on service, in a casualty list published on May 17. He received a temporary Commission in the I. M. S. on November 26, 1917.

Service Notes.

To be C. S. I.

Colonel C. McTaggart, C.I.E., I.M.S.

To be C. I. E.

Lieutenant-Colonel R. H. Maddox, I.M.S.
Major L. E. Gilbert, I.M.S.
Major W. D. A. Keys, I.M.S.
Major W. M. Anderson, M.D., I.M.S.
Major P. L. O'Neill, I.M.S.
Captain G. G. Jones, M.B., I.M.S.
Lieutenant-Colonel R. A. Needham, D.S.O., I.M.S.
Lieutenant-Colonel W. D. Sutherland, I.M.S.
Lieutenant-Colonel J. J. Bourke, I.M.S.
Lieutenant-Colonel J. Stephenson, I.M.S.
Lieutenant-Colonel E. J. O'Meara, I.M.S.

Awarded the D. S. O.

Major S. H. Lee Abbott, M.B., I.M.S.
Major H. M. H. Melhuish, I.M.S.

To be C. M. G.

Lieutenant-Colonel W. W. White, C.B., M.D., I.M.S.
Lieutenant-Colonel A. J. Macnab, C.B., F.R.C.S., I.M.S.
Lieutenant-Colonel G. McI. C. Smith, M.B., I.M.S.

To be C. B. E.

Lieutenant-Colonel J. O. Currie, C.M.G., C.I.E., I.M.S.

To be O. B. E.

Captain F. A. Barker, M.B., I.M.S.
Captain M. J. Holgate, M.B., I.M.S.
Major S. W. Jones, I.M.S.
Temporary Captain R. C. Malhotra, M.B., I.M.S.
Lieutenant-Colonel C. Milne, M.B., I.M.S.
Lieutenant-Colonel G. H. Stewart, M.B., I.M.S.
Major J. J. Urwin, F.R.C.S., I.M.S.
Major N. S. Wells, M.B., I.M.S.
Major M. F. White, M.B., I.M.S.
Major H. M. Cruddas, C.M.G., I.M.S.
Captain J. C. John, M.B., I.M.S.
Captain J. B. de W. Molony, M.B., I.M.S.
Major E. B. Munro, M.D., I.M.S.
Major V. N. Whitmore, I.M.S.
Captain W. E. R. Williams, M.B., I.M.S.
Major I. M. Macrae, M.B., I.M.S.
Lieutenant-Colonel H. P. Dimmock, I.M.S.
Lieutenant-Colonel J. C. C. Smith, M.B., I.M.S.

MENTIONED IN DESPATCHES.

By the C. in-C. British Forces in Italy.

Lieutenant-Colonel (tem. Col.) J. C. Robertson, C.M.G., C.I.E., M.B., I.M.S.

By the C. in-C. British Salonika Force.

I. M. S.

Major (actg. Lt.-Col.) S. H. L. Abbott, M.D.
Captain F. J. Anderson, M.C., M.B.
Captain (actg. Maj.) F. A. Barker, M.B.

Captain T. L. Bomford, M.B.
Captain H. H. Brown.
Captain (actg. Maj.) M. J. Holgate, M.B.
Major (actg. Lt.-Col.) S. W. Jones.
Major (actg. Lt.-Col.) E. C. G. Maddock, M.D., F.R.C.S. (Edin.).
Major & Bt. Lt.-Col. (actg. Lt.-Col.) H. M. H. Melhuish.
Lieutenant-Colonel C. M. B. Milne.
Major (actg. Lt.-Col.) J. C. S. Oxley, F.R.C.S.
Captain (actg. Maj.) A. L. Sheppard, M.B.
Lieutenant-Colonel G. McI. C. Smith, M.B.
Major (actg. Lt.-Col.) G. H. Stewart, M.B.
Major (actg. Lt.-Col.) J. J. Urwin, M.B., F.R.C.S.
Captain R. L. Vance.
Major (actg. Lt.-Col.) N. S. Wells, M.B.
Major R. T. Wells, M.B.
Major (actg. Lt.-Col.) M. F. White, M.B.
Temporary Captain S. B. Gadgil, F.R.C.S.
Temporary Lieutenant B. C. Ghosh.
Temporary Captain M. R. Grandhi, M.B.
Temporary Captain R. C. Malhotra.

By the C. in-C. Mesopotamian Expy. Force, I. M. S.

Captain H. G. Alexander, F.R.C.S.
Major (actg. Lt.-Col.) W. M. Anderson, M.D.
Major A. J. V. Betts, M.B.
Captain H. M. Collins.
Major (actg. Lt.-Col.) F. P. Connor, D.S.O., F.R.C.S.
Lieutenant-Colonel H. M. Cruddas, C.M.G.
Captain H. J. M. Cursetjee, D.S.O., M.B.
Tempo-Captain M. Dass.
Lieutenant-Colonel C. D. Dawes.
Major W. J. Fraser, M.B., F.R.C.S. (Edin.).
Major (actg. Lt.-Col.) A. B. Fry, D.S.O., M.D.
Major (actg. Lt.-Col.) L. E. Gilbert.
Major and Bt. Lt.-Col. C. M. Goodbody, C.I.E., D.S.O., F.R.C.S.I.
Major and Bt. Lt.-Col. J. D. Graham, M.B.
Lieutenant-Colonel (tem. Col.) J. A. Hamilton, C.M.G., M.B., F.R.C.S. (Edin.).
Major and Bt. Col. W. H. Hamilton, D.S.O., F.R.C.S.
Major (actg. Lt.-Col.) W. D. A. Keys, M.D.
Lieutenant-Colonel R. H. Maddox, M.B.
Major P. S. Mills, M.B.
Captain J. B. de W. Molony, M.B., F.R.C.S.
Captain A. C. Munro, M.D.
Major E. B. Munro, M.B.
Temporary Captain C. E. R. Norman.
Captain H. E. Shortt, M.B.
Temporary Captain A. D. Shroff, M.B.
Lieutenant-Colonel G. E. Stewart, M.B., F.R.C.S. (Edin.).
Captain (actg. Maj.) M. L. Treston.
Captain W. L. Watson.
Major V. N. Whitmore.
Captain (actg. Maj.) W. E. R. Williams, M.B.

By the C. in-C. East African Expy. Force.

Captain I. D. Grant, M.B.
Captain J. J. Liston, M.B.

BREVET RANK

To be Brevet-Major.

Captain W. C. Paton, M.C., M.B., I.M.S.
Captain J. A. Sinton, V.O., M.B., I.M.S.

To be Brevet Lieutenant-Colonel.

Major J. L. Lunham, M.B., F.R.C.S., I.M.S.
Major F. P. Connor, F.R.C.S., I.M.S.
Major R. A. Lloyd, D.S.O., M.D., I.M.S.

To be Brevet-Colonel.

Lieutenant-Colonel W. H. Ogilvie, C.M.G., M.B., I.M.S.

INDIAN MEDICAL SERVICE.

SUBJECT to His Majesty's approval, temporary Captain Umedram Lalbhai Desai, Indian Medical Service, is permitted to resign his commission, with effect from the 8th April, 1919.

SUBJECT to His Majesty's approval, temporary Captain Edward Alexander Marie Joachim Goldie, Indian Medical Service, is permitted to resign his commission with effect from the 20th May, 1919.

MAJOR J. W. D. MEGAW, M.B., I.M.S., Professor of Pathology and temporary Principal, King George's Medical College, Lucknow, is confirmed in the appointment of Professor in the College.

SEPT., 1919.]

LIEUTENANT-COLONEL R. F. STANDAGE, Indian Medical Service (Bombay), an Agency Surgeon of the 2nd class, was granted privilege leave for one month, with effect from the 17th April, 1919.

MAJOR E. C. C. MAUNSELL, Indian Medical Service, Staff Surgeon, Bangalore, officiated as an Agency Surgeon of the 2nd class, and was posted temporarily as Residency Surgeon, Mysore, in addition to his own duties, for the period from the 17th April to the 16th May, 1919.

MAJOR (temp. Lieut.-Col.) R. A. NEEDHAM, D.S.O., M.B., is permitted to retain the temporary rank of Lieut.-Colonel while holding the appointment of Deputy Director-General, Indian Medical Service, 24th October, 1918.

Temporary Lieutenant to be temporary Captain
Yadatore Vankoba Krishnamoorthy, M.B. 15th January, 1919.

NOTE.—Lieutenant-Colonel (temporary Colonel) W. W. Clemesha, C.I.E., M.D., I.M.S., relinquishes his temporary rank on ceasing to be employed as Deputy Director of Medical Services, East African Field Force, 5th April, 1919.

MAJOR J. MCPHERSON, Indian Medical Service, an Agency Surgeon of the 2nd Class, is granted privilege leave for three months, combined with furlough for nine months, with effect from the 1st July 1919, under Articles 233 and 308 (b) of the Civil Service Regulations.

MAJOR S. C. CHUCKERBUTTY, I.M.S., Officiating Civil Surgeon, Sylhet, is granted combined leave out of India for 6 months, viz., privilege leave for 4 months and 16 days and furlough for the remaining period, with effect from the 26th June 1919.

ON being relieved by Civil Assistant Surgeon Lakshmi Prasad Chaliha, Major E. J. C. McDonald, I.M.S., Officiating Civil Surgeon, Sadiya Frontier Tract, is appointed to be Officiating Civil Surgeon, Sibsagar.

PENDING the arrival of Major E. J. C. McDonald, I.M.S., temporary Civil Assistant Surgeon Kishori Chandra Chakravarti, in medical charge of the Sadr subdivision Sibsagar, is appointed temporarily to officiate as Civil Surgeon, Sibsagar, in addition to his own duties.

ON being relieved by temporary Civil Assistant Surgeon Kishori Chandra Chakravarti, Lieutenant-Colonel H. S. Wood, I.M.S., Civil Surgeon, Sibsagar, is appointed to be Civil Surgeon, Sylhet.

PENDING the arrival of Lieutenant-Colonel H. S. Wood, I.M.S., Civil Assistant Surgeon Chandra Kumar Datta, in medical charge of the Sadr subdivision, Sylhet, is appointed temporarily to officiate as Civil Surgeon, Sylhet, in addition to his own.

IN exercise of the powers conferred by Regulation XI, Clause (a), the regulations for the nomination and election of Members of the Legislative Council of the Chief Commissioner of the Central Provinces, the Chief Commissioner, with the previous sanction of the Governor-General, is pleased to nominate Lieutenant-Colonel Clement Henry Ransley, I.M.S., to be a Member of the Council in place of the Hon'ble Colonel C. R. M. Green, M.D., F.R.C.S., I.M.S., resigned.

THE services of Lieutenant-Colonel C. A. Gill, I.M.S., Chief Malaria Medical Officer, Punjab, were placed at the disposal of the Government of India, Army Department, with effect from the forenoon of the 2nd June, 1919.

WITH effect from the forenoon of the same date Colonel R. C. MacWatt, I.M.S., Inspector-General of Civil Hospitals, Punjab, assumed charge of the office of Chief Malaria Medical Officer, Punjab, in addition to his other duties.

MAJOR W. GILLITT, C.I.E., M.D., I.M.S., whose services have been replaced at the disposal of the Government of Bihar and Orissa by the Notification of the Government of India in the Home Department, No. 238, dated the 13th June, 1918, is appointed, until further orders, to be the Superintendent of the Central Jail at Bhagalpur.

Bombay Castle, July, 1919.

HIS EXCELLENCY the Governor in Council has been pleased to appoint Mr. Govind Bhau Prabhakar, L.R.C.P. (Lond.), L.F.P.S. (Glas.), I.M. & S., to be on general duty at the

Cawasji Jehangir Ophthalmic Hospital, Bombay, from the 26th April to the 26th July 1919.

HIS EXCELLENCY the Governor in Council is pleased to appoint Major C. C. Murison, F.R.C.S. E., D.P.H. (Edin and Glas.), D.T.M. (Liver.), I.M.S., as substantive *pro tempore* Civil Surgeon, first class, with effect from the 1st April 1919, *vice* Lieutenant-Colonel H. Herbert, F.R.C.S., I.M.S., resigned.

HIS EXCELLENCY the Governor in Council is pleased to appoint Major L. P. Stephen, M.B., B.Ch. (Abdn.), D.P.H. (Lond.), F.R.C.S. E., I.M.S., as substantive *pro tempore* Civil Surgeon, first class, with effect from the 15th May 1919, *vice* Lieutenant-Colonel G. E. Fookes, I.M.S., resigned.

HIS EXCELLENCY the Governor in Council is pleased to make the following appointments *vice* Lieutenant-Colonel E. F. G. Tucker, M.B., B.S., M.R.C.P. (Lond.), I.M.S., proceeding on leave, pending further orders:—

Lieutenant-Colonel L. T. R. Hutchinson, M.D., B.C., D.P.H. (Cantab.), I.M.S., to act as First Physician, J. J. Hospital, and Professor of Medicine and Therapeutics, Grant Medical College, Bombay, in addition to his own duties.

Lieutenant-Colonel M. P. Khareghat, I.M.S. (retired), on return from leave, to act as Presidency Surgeon, Second District, with attached duties, *vice* Lieutenant-Colonel L. T. R. Hutchinson, I.M.S., who is holding that appointment in addition to his own duties.

IN exercise of the powers conferred by sub-section (3) of section 3 of the Bombay Medical Act, 1912 (Bombay VI of 1912), the Governor in Council is pleased to nominate Bt.-Lt.-Col. R. M. Carter, C.B., F.R.C.S., I.M.S., as a member of the Bombay Medical Council, *vice* Lt.-Col. A. Hooton, I.M.S.

LIEUTENANT-COLONEL G. T. BIRDWOOD, I.M.S., Civil Surgeon, Lucknow, privilege leave for one month.

CIVIL ASSISTANT SURGEON BADRI DAT PANDE, attached to the Sadr dispensary, Aligarh, privilege leave for two months.

LIEUTENANT-COLONEL J. N. WALKER, I.M.S., on return from leave, to be Civil Surgeon, Lucknow, *vice* Lieutenant-Colonel Birdwood, I.M.S., granted leave.

IN supersession of this department's Notification No. 353-C.XVI—15, dated the 19th May, 1919, Dr. D. D. Pandya to be Deputy Sanitary Commissioner, IV Range, and to hold additional charge of I Range, from the forenoon of the 22nd March, 1919.

WITH effect from the 1st July, 1919, Major C. L. Dunn, I.M.S., Deputy Sanitary Commissioner, II Range, to be Sanitary Commissioner, United Provinces, sub. *pro tem*.

THE services of Lieutenant-Colonel D. W. Sutherland, C.I.E., I.M.S., Principal, King Edward Medical College, Lahore, were placed at the disposal of the Government of India, Army Department, with effect from the forenoon of the 26th May 1919.

THE undermentioned officers are granted, subject to His Majesty's approval, the acting rank of Lieutenant-Colonel while commanding the Medical units mentioned against their names, with effect from the dates, or for the periods specified:—

Major J. McA. MacMillan, No. 123 Combined Field Ambulance. Dated 6th February 1917.

Army Department Notification No. 2432, dated the 25th October 1918, is cancelled in so far as it relates to Majors * * * and J. McA. Macmillan, Indian Medical Service.

THE following extracts are published for general information:—

London Gazette, dated the 4th April 1919, pages 4423, 4432, 4433, 4434, and 4435.

The undermentioned appointments have been made:—

ADMINISTRATIVE SERVICES AND DEPARTMENTS.

Assistant Director of Medical Services.

COLONEL C. R. M. GREEN, Indian Medical Service, 14th May 1917.

HIS EXCELLENCY the Governor of Bombay in Council is pleased to make the following appointments, pending further orders:—

Dr. Anandrai Keshavlal Dalal, L.M. & S., F.R.C.S. (Eng.), to act as Senior Surgeon, J. J. Hospital, and Professor of Surgery, Grant Medical College, Bombay, in relief of Major A. F. Hamilton, M.B., F.R.C.S. (Lond.), I.M.S., who is holding charge of these appointments in addition to his own duties.

Dr. Gopal V. Deshmukh, M.D. (Lond.), F.R.C.S. (Eng.), to act as Second Surgeon, J. J. Hospital, and Professor of Clinical and Operative Surgery, Grant Medical College, Bombay, *vice* Dr. A. K. Dalal.

HIS EXCELLENCY the Governor in Council is pleased to make the following appointments *vice* Lieutenant-Colonel T. Jackson, M.B., B.Ch. (R. U. I.), I.M.S., proceeded on leave, pending further orders :—

Lieutenant-Colonel S. H. Burnett, M.B., C.M., I.M.S., to act as Surgeon Superintendent, St. George's Hospital, Bombay.
Major W. M. Houston, M.B., B.Ch., D.P.H. (Dub.), D.T.M. (Liverpool), I.M.S., to act as Presidency Surgeon, First District, with attached duties, in addition to his own duties.

Major A. D. Stewart, M.B., F.R.C.S.E., I.M.S., to act as surgeon in charge, Goculdas Tejpal Native General Hospital, Bombay, in addition to his military duties.

Bombay Castle, 8th July 1919.

HIS EXCELLENCY the Governor in Council is pleased to make the following appointments *vice* Lieutenant-Colonel A. Street, M.B. (Cantab.), F.R.C.S., I.M.S., proceeded on leave, pending further orders :—

From 5th May 1919 to 9th May 1919, both days inclusive :

LIEUTENANT-COLONEL S. C. EVANS, M.B., C.M. (Edin.), I.M.S., to act as Senior Medical Officer and Senior Surgeon, J. J. Hospital, and Principal, Grant Medical College, Bombay, in addition to his own duties.

LIEUTENANT-COLONEL E. F. G. TUCKER, M.B., B.S., M.R.C.P. (Lond.), I.M.S., to be Senior Medical Officer, J. J. Hospital, Bombay, in addition to his own duties.

MAJOR A. F. HAMILTON, M.B., F.R.C.S. (Lond.), I.M.S., to act as Senior Surgeon, J. J. Hospital, and Professor of Surgery, Grant Medical College, Bombay, in addition to his own duties.

LIEUTENANT COLONEL G. MCPHERSON, M.B., C.M. (Glas.), I.M.S., to act as Principal, Grant Medical College, Bombay, in addition to his own duties.

LIEUTENANT-COLONEL R. M. CARTER, C.B., F.R.C.S., D.T.M. (Liverpool), I.M.S., to be Dean, Grant Medical College, Bombay, in addition to his own duties.

THE services of Captain G. Holroyd, I.M.S., are replaced at the disposal of the Government of India.

IN accordance with Rule 4 of the Regulations of the Central Provinces Medical Examination Board, the Chief Commissioner is pleased to appoint Major Hugh Watts, M.B., B.S. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), I.M.S., Civil Surgeon, Raipur, to be a member of the Board with effect from the forenoon of the 12th June 1919, *vice* Lieutenant-Colonel C. H. Bensley, M.R.C.S. (Eng.), L.R.C.P. (Lond.), I.M.S., Inspector General of Prisons, Central Provinces, appointed as Officiating Inspector-General of Civil Hospitals, Central Provinces, in addition to his own duties, and for so long as Lieutenant-Colonel Bensley, I.M.S., will officiate as Inspector-General of Civil Hospitals.

LIEUTENANT-COLONEL CHARLES DUER, M.B., F.R.C.S. (retired), whose re-employment was notified in Army Department Notification No. 1441, dated the 1st December 1916, has been permitted to resign, with effect from the 13th May 1919.

MAJOR-GENERAL P. HEHIR, C.B., C.M.G., C.I.E., M.D., Indian Medical Service, is retained in the service, until further orders, with effect from the 27th May 1919, the date on which he was due to retire on attaining the age of 60 years.

MAJOR (ACTG. LIEUT.-COL.) H. A. WILLIAMS, D.S.O., M.B., relinquishes his acting rank on ceasing to command troops on a Hospital Ship. 6th March 1919.

To be Acting Lieut.-Colonels while Commanding Indian Cavalry Field Ambulances.

Major A. N. Fleming, M.B., F.R.C.S.E. 29th September 1914.
Major E. A. C. Matthews, M.B. 14th December 1914.
Major J. J. Urwin, M.B., F.R.C.S. 8th February 1916.
Major W. H. Cazaly, M.B. 2nd March 1916.
Maj. E. C. Hodgson. 29th April 1916.

NOTE.—The above is substituted as regards Majors Urwin, Cazaly, and Hodgson for the notification in the *London Gazette*, dated 5th November 1918.

MAJOR CHARLES HENRY LEET PALK, M.B., F.R.C.S.E., Indian Medical Service (retired), whose re-employment was notified in Army Department Notification No. 559, dated the 11th June 1915, has been permitted to resign, with effect from the 18th April 1919.

THE following substantive changes are sanctioned among Agency Surgeons under the Foreign and Political Department :—

Consequent on the death of Lieutenant-Colonel T. W. Irvine, Indian Medical Service (Bombay), an Agency Surgeon of the 1st Class and Chief Medical Officer in the North-West Frontier Province, and with effect from the 26th January 1919.—

Lieutenant-Colonel J. H. Hugo, D.S.O., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd Class (seconded), to be an Agency Surgeon of the 1st Class (seconded).

Major H. H. Thorburn, C.I.E., Indian Medical Service, an officiating Agency Surgeon of the 2nd Class, to be an Agency Surgeon of the 2nd Class (seconded).

Consequent on the retirement from the service of Lieutenant-Colonel J. Fisher, D.S.O., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd Class (seconded), and with effect from the 25th March 1919,—

Major M. F. White, Indian Medical Service, an officiating Agency Surgeon of the 2nd Class, to be an Agency Surgeon of the 2nd Class (seconded).

MAJOR T. G. M. HARRIS, O.B.E., of the Political Department, is placed on special duty under the orders of the Hon'ble the Agent to the Governor-General and Chief Commissioner in Baluchistan, with effect from the 16th May 1919.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements, and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to "*The Indian Medical Gazette*," Rs. 14, including postage, in India. Rs. 16, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED :—

Annual Returns of the Lunatic Asylums of Bengal, 1918.
Sanitary Report, Assam, 1918.
Medical Annual, 1919. John Wright & Sons, Bristol.
Administration Report, Jails of Bengal Presidency, 1918.
The Control of Hookworm Disease by the intensive Method, (Rockefeller). By H. H. Howard, M.D.
Report on the Sanitary Administration of Bengal.
Report on the Prison Administration of Bengal.
Medical Journal of the Siamese Red Cross.
Practical Vaccine Treatment for the G. Practitioner.
By R. W. Allen, M.A., M.D. Messrs. H. K. Lewis & Co., Ltd., 1919.
On Longevity and Means for the Prolongation of Life. By Sir Hermann Weber, M.D., F.R.C.P. Messrs. Macmillan & Co., London, 1919.
Annual Report Countess of Dufferin Fund, 1918.
Diabetes and its Dietetic Treatment. By Major Basu, I.M.S. (Retd.), 10th Edition: Panini Office, Allahabad.
Annual Sanitary Report, Assam, 1918.
Notes and Statistics on Hospitals and Dispensaries of Burma, 1918.
Report on the Working of the Government Medical School, Rangoon, 1918-19.
Dispensary Returns, Assam, 1918.

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM :—

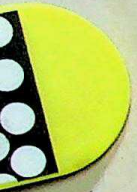
Capt. D. J. Harries, R.A.M.C., Kasauli; Major-Genl. W. E. Jennings, I.M.S., Bombay; Major-Genl. A. G. McKendrick, I.M.S., Kasauli; Nogendra Nath Mukerjee, M.B., Howrah; Gokulananda De., M.B., Howrah; Capt. W. Leonard Forsyth, I.M.S., Ranchi; Major A. E. J. Lister, M.B., I.M.S., Lucknow; Major R. P. E. Austin, R.A.M.C., Calcutta; The Editor, *B. M. G.*, London; Lt.-Col. G. Entrican, I.M.S., Burma; Major-Genl. G. E. Jennings, I.M.S., Bombay; Asst.-Surgn. P. C. Labiri, Kamrup; Lt.-Col. Wall, I.M.S., Bangalore; Capt. F. F. Strother-Smith, I.M.S., Delhi; Lt.-Col. F. P. Connor, I.M.S., Calcutta; Capt. D. G. Harries, R.A.M.C., Deolali; Major Owen Berkeley Hill, I.M.S., Arangaon; Capt. Murte, I.M.S., Arangaon.

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